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TWENTY-EIGHTH

ANNUAL REPORT

TO HIS EXCELLENCY,

F. D. PROCTOR, *Governor of Vermont.*

In Compliance with Section 247, Chapter 21 of the General
Laws of Vermont, I have the Honor to Submit
Herewith the Annual Report of the
Board of Agriculture for the Year
Ending June 30th, 1908.

F. L. DAVIS, *Secretary.*

MONOTYPED AND PRINTED BY
THE P. H. GOBIE PRESS
Bellows Falls, Vt,
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REPORT OF THE SECRETARY OF THE BOARD OF AGRICULTURE.

Fletcher D. Proctor, Governor:—

Sir:—I have the honor to submit this my first annual report.

The Board held twenty-four meetings during the winter months, two sessions each day, making forty-eight in all.

The total attendance was 5,160, or an average attendance each day of 215. At these meetings, Frank L. Russell, member of the Board and Arthur M. Vaughan, member of the Board and State Forester, were ably assisted by the following gentlemen, who are well qualified in their several specialties:

B. Walker McKean, Ex-Sec'y of Maine Board of Agriculture, whose addresses on "The Development of the Dairy Cow" were instructive and interesting; W. F. McSparran, of Furniss, Pa., practical farmer, who could instruct from actual experience on the feeding and care of the dairy cow; Dr. J. L. Hills, Director of the Vermont Experiment Station, Burlington, who is much interested in the practical side of weeding out the worthless cows from our dairy herds; Prof. L. R. Jones, State Botanist, whose lectures on grass culture were of great value; Amos J. Eaton, of South Royalton, Naturalist and also a grass specialist; Prof. C. L. Beach, Dairy Instructor at the Vermont Experiment Station; Wilfrid Wheeler, of Concord, Mass., fruit specialist; Dr. H. D. Holton, Secretary of State Board of Health; Hon. C. W. Gates, State Road Commissioner, and Geo. M. Terrill, of Morrisville, a practical Vermont fruit grower.

At each session invitation was always given for a full discussion on the subjects presented. This would bring out many valuable points from practical men and added, we think, very much to the interest and value of the sessions. It was noticeable that the Vermont farmer is reading and thinking for himself, all of which will tend to make his business more profitable.

It was also very evident that much interest is being taken all over the State in the Good Roads question; this subject being ably and interestingly presented by our State Road Commissioner.

It is also evident that in some sections of the State the subject of Forestry is attracting much attention. This subject should be called to the attention of land owners and kept before them so that some of us may live to see the hills of Vermont again covered with growing, valuable timber.

While interest in the subjects of the Dairy Cow and Horse Breeding never wane in this State, the farmer is fast awakening to the fact that there's profit in the business.

The weeding out of the "boarding cow" from our dairy herds by the use of scales and the Babcock test, is attracting much attention; the question of forming Test Associations throughout the State is being discussed, and the prospect is that in the near future several such associations will be organized, soon to be followed, we hope, by those covering the whole State. Also the question of Home Sanitation is received with great interest by every farmer and home maker or owner; Dr. Holton's lectures on this subject being listened to with great favor, and the good work goes on.

We think our farmers should awaken to the profit and importance of fruit growing and truck farming. We are aware that some sections of the State have given this matter attention with great profit. Every farm should have an apple orchard at least; it adds to the profit side of the account, to the selling value of the farm and is a source of pleasure; helping to keep the boys and girls interested in farm life.

From our experience of the past winter's meetings we are satisfied that the best interests of our farmers are served by holding most of our meetings in the smaller towns; those somewhat remote from the regular lines of railroad travel. The people of these towns do not always have the number of social gatherings and other attractions that the larger and more accessible towns do, and our meetings have a tendency to attract just that element of farm life that we wish or ought to reach. We are well aware that work in such towns means much hard work for the speakers, long and cold rides from town to town, also that there is much difficulty in so arranging a series of meetings that time can be used economically, but for all that we think it the right way.

In such towns our meetings have always been well attended and much interest shown, and I will again say that the Vermont farmer is getting posted and is fast adopting modern methods, at least most are, and such do not spend much time talking about hard times,—its the non-progressive man who is doing this.

The Board wish to acknowledge the many favors they have received from the Grange in the several towns where our meetings have been held. We have ever found them interested and ready to help make our meetings a success, and it's apparent to all that their organization is of great good throughout the State.

As a whole I think the past year has been prosperous for the farmer; crops have been full up to the average; prices have ruled well up, and all Vermont products have met with ready sales at profitable prices.

Rural free delivery is an important factor in rural farm life; it brings the remote farmer in daily communication with his business center; keeps him better posted, or ought to, saves him time and trouble in making journeys to the post-office or for his small purchases, and is making the rural farm a better place to live and work on; keeps the boys more contented and, as time goes on, will more and more add to the value and importance of rural farm life.

On the whole it would seem that our farmers are fast becoming contented; are adopting the little luxuries that make life pleasant, and will make Vermont one of the ideal agricultural states of the Union.

F. L. DAVIS, Secretary.

AN ACT TO PROVIDE FOR THE PRINTING OF THE REPORT OF THE VERMONT DAIRYMEN'S ASSOCIATION.

It is hereby enacted by the General Assembly of the State of Vermont:

SECTION 1. Section two hundred and forty-seven of the Vermont Statutes shall be amended so as to read as follows:

The Secretary shall prepare on or before the 30th day of June annually, a detailed report of the proceedings of the Board, with such suggestions in regard to its duties and the advancement of the interests herein specified as may seem pertinent and he may append thereto, such abstracts of the proceedings of the several agricultural societies, and farmers' clubs in the State as may be advisable, and the report of the Vermont Dairymen's Association. The report shall show under separate heads the work of the Board relating to the different subjects herein mentioned.

SEC. 2. The provisions of section two hundred and fifty-one of Vermont Statutes requiring the printing of a report by the Vermont Dairymen's Association is hereby repealed.

Approved November 24, 1896.

BOARD OF AGRICULTURE.

SECTION
245. Members; vacancies.
246. Meetings.

SECTION
247. Report.
248. Statistical information.

SECTION 245. The Governor, the President of the University of Vermont and State Agricultural College, and three other persons appointed by the Governor, and confirmed by the Senate during each biennial session of the General Assembly, and who shall hold their office for the term of two years from and after the first day of December in the year in which the appointment is made, shall constitute the Board of Agriculture, for the improvement of the general interests of husbandry, the promotion of agricultural education throughout the State, and for the discharge of such other duties as are hereinafter set forth; vacancies in the Board shall be filled by the Governor. Said Board shall appoint from its number a Secretary.

SEC. 246. The Board shall hold one meeting in each county annually, and others if deemed expedient, and may employ lecturers, essayists or other aid in conducting said meetings, managing its affairs generally and discharging its duties. At such meetings it shall present subjects for discussion, and among other topics forestry and tree planting, roads and road making.

SEC. 247. The Secretary shall prepare on or before the thirtieth day of June, annually, a detailed report of the proceedings of the Board, with such suggestions in regard to its duties and the advancement of the interests herein specified as may seem pertinent; and he may append thereto such abstracts of the proceedings of the several agricultural societies and farmers' clubs in the State as may be advisable. The report shall show under separate heads the work of the Board relating to the different subjects herein mentioned.

SEC. 248. The Board shall collect authentic statistical information, as full as possible, relating to agriculture and agricultural products, farms and farm property, the manufacturing and mining industries of the State, which, under a separate head, shall form a part of its annual report; and such information shall be complete as to unoccupied farms. The Board shall also publish such infomation in separate form, showing by description and illustrations, the resources and attractions of Vermont; also the advantages the State offers and invitations it extends to capitalists, tourists and farmers; and shall distribute the same in such manner as, in its judgment, will be most effective in developing the resources and advertising the advantages of the State.

REGULATING MANUFACTURE AND SALE OF PROVISIONS.

MILK AND CHEESE.

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4342. Penalty for selling unmarked.

MAPLE SUGAR AND HONEY.

4343. Penalty for adulterating maple sugar and honey.

MILK AND CHEESE.

SECTION 4327. A person who sells or furnishes, or has in his possession with intent to sell or furnish, milk diluted, with water, adulterated or not of good standard quality or milk or cream, which has been treated with chemicals, shall for each offense, be fined not more than three hundred dollars and not less than fifty dollars, and any person who sells or offers for sale or furnishes milk from which the cream or any part has been taken or keeps back part of the milk known as "strippings" without the full knowledge of the person to whom such milk shall be sold or offered for sale or furnished, shall for each offense, be fined as previously provided for in this section in cases of adulteration.

SEC. 4328. In all creameries and cheese factories in this State, milk containing four per cent. of butter-fat shall be the standard used as a paying basis.

SEC. 4329. Where, in prosecutions under the preceding section, the ordinary means of proof are not available or sufficient, sealed samples of the milk sold or furnished, or kept with intent to be sold or furnished, taken from such milk in the presence of at least one disinterested witness and with the knowledge and in the presence of the person or his agent or servant so selling or furnishing, or having in his possession with intent to sell or furnish, said milk may be sent to the State Agricultural Experiment Station to be tested; the result of such test shall be deemed competent evidence in such prosecutions, but shall not exclude other evidence.

SEC. 4330. Said samples shall be placed in tin or glass vessels, securely sealed, with a label thereon stating the time when, place where, the sample was drawn, from whose milk taken and signed by the person taking the same and by one or more disinterested witnesses. Upon request, a like sample shall be given to such person, his agent or servant, for which a receipt shall be given to the person taking or drawing the same.

SEC. 4331. Standard milk shall contain not less than twelve and one-half per cent. of solids, or not less than nine and one-fourth of total solids exclusive of fat, except in the months of May and June, when it shall contain not less than twelve per cent. of total solids. This rule shall govern tests made at the experiment station, and an officer or employee thereof found guilty of fraud in making tests shall be fined one thousand dollars.

SEC. 4332. A person who marks or otherwise designates or causes to be marked or otherwise designated as "creamery" butter or cheese, or the package in which it is contained, when such butter or cheese is not manufactured at a creamery, or sells or offers to sell any such butter or cheese so marked, shall be fined not more than three hundred dollars and not less than fifty dollars.

SEC. 4333. Justices shall have concurrent jurisdiction with the county court in prosecutions under the four preceding sections.

IMITATIONS OF BUTTER AND CHEESE.

SEC. 4334. No person by himself, his agent, or servant, shall manufacture, out of animal fat, or animal or vegetable oils not produced from unadulterated milk or cream, any article in imitation of butter or cheese, or mix with or add to milk, cream or butter any acids or other deleterious substances, animal fats, or animal or vegetable oils so as to produce an article in imitation of butter or cheese.

SEC. 4335. If a person violates the provisions of the preceding section he shall be fined not more than three hundred dollars, and not less than one hundred dollars, or be imprisoned for not more than one year and not less than six months for the first offense; and for each subsequent offense shall be fined not more than one thousand dollars and not less than three hundred dollars or imprisoned for one year. One-half of the fine shall go to the complainant.

SEC. 4336. If a person by himself, his agent, or servant, sells, exposes for sale, or has in his possession with intent to sell, any article made in imitation of butter, that is of any other color than pink, shall, for every package sold or exposed for sale, be fined fifty dollars, and for each subsequent offense one hundred dollars. One-half of the fine shall go to the complainant.

SEC. 4337. If a proprietor or keeper of a hotel, restaurant, boarding house, eating saloon or other place where food is furnished to persons paying for the same, places upon the table or has in his possession with intent to use, any article made in imitation of butter, that is of any other color than pink, he shall be fined fifty dollars for the first offense, and for each subsequent offense one hundred dollars. One-half of the fine shall go to the complainant.

SEC. 4338. The complainant may cause specimens of suspected butter or cheese to be analyzed or otherwise tested as to color and compounds; the expense of such analysis or test not exceeding twenty dollars, in any case, may be included in the cost of prosecution.

SEC. 4339. A justice of the peace may issue a warrant for searching, in the day-time, any store, hotel, boarding house, or other place where oleomargarine, butterine, or other substance imitating butter or cheese is suspected to be kept or concealed, when the discovery of such article may tend to convict a person of any offense under the five preceding sections. No warrant shall be issued except upon the oath of some person that he has reason to suspect and does suspect that such article or articles are kept or concealed in the place to be searched.

SEC. 4340. The term "butter" shall mean the product usually known by that name, manufactured exclusively from milk or cream or both, with or without salt or coloring matter.

LARD.

SEC. 4341. No person by himself, his agent or servant, shall prepare, sell or expose for sale, lard or any substance intended for use as lard, which contains any ingredients but the pure fat of swine, in any tierce, bucket, pail or other package under a label bearing the words "pure", "refined", or "family", alone or in combination with other words, unless the package containing the same bears upon the outside thereof, in letters not less than one-fourth of an inch long, the words, "Compound Lard."

SEC. 4342. A person violating the provisions of the preceding section shall be fined not more than fifty dollars for each offense.

MAPLE SUGAR AND HONEY.

SEC. 4343. A person who adulterates maple sugar, maple syrup, or bees' honey with cane sugar, glucose, or any substance whatever for the purpose of sale or knowingly sells maple sugar, maple syrup or bees' honey that has been adulterated, shall be punished by a fine of not more than two hundred dollars and not less than fifty dollars for each offense; one-half of such fine shall go to the complainant.

AN ACT PROVIDING FOR THE INSPECTION OF FOOD, DRUGS AND OTHER ARTICLES IN COMMON USE.

SECTION
10. Sale of calf less than four weeks old.

SECTION
11. Inspection of carcasses by health officers.
12. Sale of unwholesome meat.

It is hereby enacted by the General Assembly of the State of Vermont:

SECTION 10. Whoever kills, or causes to be killed, for the purpose of sale for food, a calf less than four weeks old, or knowingly sells, or has in his possession with intent to sell, for food, the meat of any such calf, shall be imprisoned not exceeding thirty days, or fined not more than fifty dollars or both.

SEC. 11. The health officer of any city, town, or village may inspect the carcasses of all slaughtered animals intended for food for men, and all meat, fish, vegetables, produce, fruit or provisions of any kind found in their cities or towns, and for such purposes may enter any building, enclosure or other place in which such carcasses or articles are stored, kept or exposed for sale. If, on such inspection, it is found that such carcasses or articles are designed for food for man and are tainted, diseased, corrupted, decayed, unwholesome, or from any cause unfit for food, the board of health shall seize the same and cause it or them to be destroyed forthwith, or disposed of otherwise than for food. The powers conferred in this section upon local health officers are conferred upon any member of the State Board of Health to perform the same acts in any part of the State.

SEC. 12. Any meat, unwholesome provisions or articles sold, kept or offered for sale for food or drink for human beings, and any articles adulterated in violation of any of the preceding sections, shall be deemed a public nuisance and summarily destroyed.

AN ACT TO PROTECT SHIPPERS OF COWS FROM VERMONT TO MASSACHUSETTS, AND TO REPEAL NO. 86 OF THE ACTS OF 1902.

It is hereby enacted by the General Assembly of the State of Vermont:

SECTION 1. A person shipping cows as and for milch cows, subject to the tuberculin test, to any place in the state of Massachusetts, may, if any such cows respond to the test, and if the Massachusetts board of cattle commissioners condemn or refuse to accept them, sell such condemned cows for the highest price obtainable under the Massachusetts regulations, and report in writing to the cattle commissioner of Vermont, within thirty days from shipment from this State, stating when such cows were shipped from Vermont, the person or persons from whom purchased, the amount paid for the same, the amount received when sold in Massachusetts, the number of each animal, as shown by a tag in the ear of such animal, which shall have been placed there before the animal left the State of Vermont, and which must agree with the record kept by the person shipping and such other information as may be required by the Vermont cattle commissioner.

SEC. 2. Upon receipt of the report required by section one of this act, and of a certificate from the cattle commissioners of Massachusetts, showing the number and description of such animal, name of shipper, cause of rejection, and of a certificate under oath from the seller of the animal, together with a certificate from the owner of the animal from whom purchased in Vermont, giving a description of such animal, the date and place of sale, and the price paid for same, the cattle commissioner of Vermont shall, if he is satisfied of the truth of such report and such last named certificate, allow and draw an order for a sum equal to seventy-five per cent. of the purchase price of such animal, less the amount received for the same in Massachusetts. In no case shall such seventy-five per cent. be reckoned on a sum greater than fifty dollars.

SEC. 3. A person who knowingly makes a false report or false certificate to the cattle commissioner in any particular, in carrying out the provisions of sections one and two of this act, shall be fined not more than two hundred dollars nor less than one hundred dollars for each offense. Justices of the peace shall have concurrent jurisdiction with county courts of all prosecutions under this section.

SEC. 4. No. 86 of the acts of 1902 is hereby repealed.

SEC. 5. This act shall take effect from its passage.

Approved December 19, 1906.

AN ACT TO CREATE THE OFFICE OF CATTLE COMMISSIONER AND TO DEFINE HIS POWERS AND DUTIES.

It is hereby enacted by the General Assembly of the State of Vermont:

SECTION 1. The Governor shall, in the month of December, 1906, and biennially thereafter, appoint a cattle commissioner, who shall be a resident of the State, and whose term of office shall commence on the first day of January following his appointment, and continue for two years, and until his successor is appointed and has qualified. The Governor shall fill any vacancy which may occur in such office. Said cattle commissioner shall give a bond to the State treasurer for the faithful performance of his duties, in the penal sum of five thousand dollars.

SEC. 2. A person shall not bring into the State, cattle or other domestic animals, other than horses, sheep and swine, not known or suspected to be diseased except by written permission of the cattle commissioner. Such permit shall direct where such cattle or other domestic animals are to be detained in quarantine for examination. When such cattle or other domestic animals have been brought within the State, the owner thereof shall forthwith notify the commissioner, who, either in person or by some competent assistant shall, within six days of his receiving notice, examine such cattle or other domestic animals, and if he deems necessary apply the tuberculin test. All cattle or other domestic animals found to be free from tuberculosis or other contagious disease shall be released from quarantine and those found to be diseased shall forthwith be deported or slaughtered by the owner, and the carcasses disposed of as hereinafter provided. The owner shall bear the expenses of detention and examination, except those of the commissioner or his assistant, which shall be borne by the State. But nothing in this section shall be construed to apply to the transportation of cattle or other domestic animals through the State by rail. A person living near the State line and owning or occupying land in an adjoining state or country, may drive cattle or other domestic animals to and from such land under such restrictions as the commissioner may prescribe. A person who violates a provision of this section shall be fined fifty dollars for each offense and each animal shall constitute a single offense.

SEC. 3. A person who knows, or suspects that bovine tuberculosis, or any other contagious disease exists among cattle or other domestic animals owned or controlled by him shall notify the cattle commissioner, and said commissioner shall, by himself or by some person employed by him for that purpose, as soon as possible, make a thorough physical examination of such animals, and if he deems necessary may apply the tuberculin test, and if such animals or any of them are found to have a contagious disease shall cause them to be killed forthwith and the barns of the owner or keeper thoroughly disinfected. The expense of such slaughtering and disinfecting shall be paid by the owner or keeper. If said commissioner believes or is informed that an epidemic or contagious disease exists among domestic animals in the State, he shall immediately make inquiry, and if the same is found to exist, shall, if he deem necessary, quarantine the herd of domestic animals where such epidemic or contagious disease prevails, and shall take such measures for its extermination as in his judgment the public good requires. But the provisions of this act shall not be construed so as to include tuberculosis as an epidemic disaese and quarantine regulations shall not apply to tuberculosis.

SEC. 4. The value of all cattle or other domestic animals killed by order of the cattle commissioner, shall be appraised by the commissioner or his duly authorized agent and by the owner of the cattle and if they cannot agree on the amount of the appraisal they shall select a third disinterested person who, together with them, shall appraise the animals, such appraisal to be made just before killing, and to be the actual value of such animals, but in no case to exceed the sum of fifty dollars for any one animal. The owner of the animal shall receive seventy-five per cent. of such appraisal, and in addition the hide of the slaughtered animal. The carcasses of the animal shall be buried or destroyed by the owner on the premises where slaughtered in the presence of the cattle commissioner, or some person by him designated for that purpose. Within sixty days after the slaughter of an animal under the provision of this and the preceding section, the cattle commissioner shall make out and approve in writing an account thereof, stating the number of animals, the appraisal value of each and the amount to be paid the owner therefor, and upon presentation thereof the auditor of accounts shall draw an order in favor of the owner for the amount to be paid him under the provisions of this act. No indemnity shall be paid to an owner of condemned cattle or other domestic animals than have not been owned or kept within this State for at least six months previous to the discovery of the disease, unless such animal shall, at the time of its importation into this State, have been examined in accordance with the provisions of this act and pronounced free from disease.

SEC. 5. The cattle commissioner shall receive for his services four dollars a day for time actually spent in the performance of his duties and his actual expenses, and shall be authorized to employ at the expense of the State, such clerical veterinary or other assistance as may be necessary to carry out the provisions of this act. The account of said commissioner for his services, expenses and the payments for assistance shall be audited by the auditor of accounts, who shall draw his order therefor.

SEC. 6. Said commissioner shall keep a record of his doings, report the same to the Governor prior to the fifteenth day of September, annually, and at such other times as the Governor may require. There shall be printed by the commissioner of State printing, and distributed under the direction of the cattle commissioner, at the expense of the State, as many copies of the report of said commissioner as the Governor may direct.

SEC. 7. No. 85 of the acts of 1902, and No. 146 of the acts of 1904, and all other acts or parts of acts inconsistent with this act are hereby repealed; except that such acts or parts of acts shall remain in force in so far as they relate to or affect proceedings or actions and acts, rights or liabilities established, offenses committed or prosecutions begun under or by virtue thereof.

SEC. 8. This act shall take effect from its passage.

Approved December 15, 1906.

AN ACT IN AMENDMENT OF SENATE BILL NO. 127 OF THE ACTS OF THE GENERAL ASSEMBLY OF 1906.

It is hereby enacted by the General Assembly of the State of Vermont:

SECTION 1. The cattle commissioner may, with the approval of the Governor, arrange for the disposition of the carcasses of animals found to have tuberculosis upon examination and test made as provided in section three of senate bill No. 127 of the acts of the general assembly of 1906, at some fertilizer or rendering plant, and may cause such animals or animal to be killed at such plant, and the carcasses thereof to be destroyed in the presence of the commissioner or of some citizen of Vermont by him authorized for that purpose, beyond all possible use for food purposes. The commissioner shall keep an accurate account of each animal so disposed of, by giving a tag number and description of each, from whence taken and when killed, and in whose presence destroyed, and how, and a certificate showing all the same, signed and sworn to in Vermont by the party witnessing the destruction, shall be kept on file with the commissioner, and for any knowing misstatement therein the person making oath thereto shall be deemed guilty of perjury and punished accordingly. The contract with such fertilizer or rendering plant shall be in writing; and a duplicate copy thereof shall be kept on file with the auditor of accounts, open to public inspection. All payments made for the carcasses of animals so destroyed, shall be made to the State Treasurer with a statement thereof showing the amount paid for each animal the same to be designated by tag number to correspond with the records of the commissioner.

SEC. 2. In case of the disposition of carcasses in the manner provided in the preceding section, the hides of the slaughtered animals shall belong to the State and be sold by the commissioner, and returns made therefor as provided for returns for the carcasses of slaughtered animals as provided in the preceding section.

SEC. 3. The provisions of No. 85 of the acts of 1902, are hereby continued in force until December 28, 1906, and senate bill of No. 127 of the acts of the general assembly of 1906 shall not take effect until December 28, 1906, and shall then take effect.

SEC. 4. The cattle commissioner shall receive for his services a salary of twelve hundred dollars per year, payable quarterly, in lieu of the four dollars per day provided in section five of senate bill No. 127 of the acts of the general assembly of 1906. All other provisions of said section five shall continue and remain in force.

SEC. 5. Sections one, two and four of this act shall take effect December 28, 1906. Sections three and five shall take effect from its passage.

Approved December 19, 1906.

AN ACT TO PREVENT THE SALE OF DISEASED ANIMALS AND MEAT, AND TO REPEAL SECTION 5074 OF THE VERMONT STATUTES, SECTIONS 3, 6 AND 8 OF NO. 85 OF THE ACTS OF 1902, AND SECTIONS 10 AND 21 OF NO. 145 OF THE ACTS OF 1904.

It is hereby enacted by the General Assembly of the State of Vermont:

SECTION 1. A person who sells or offers to sell or keeps with intent to sell for food purposes, or ships out of the State, or keeps with intent to ship out of the State, for food purposes, the flesh of any animal or fowl which died or was killed when diseased, or the flesh of a calf which was less than four weeks old or weighed less than fifty pounds, dressed weight, when killed, shall be imprisoned not more than one year, or fined not more than three hundred dollars, or both. The possession of any such flesh dressed or packed in a manner suitable for sale or use as food shall be prima facie evidence of the intent to sell the same, or to ship the same out of the State, for use as food.

SEC. 2. A person who sells or offers to sell or keeps with intent to sell an animal known to him to be infected with bovine tuberculosis or any other contagious disease, or any disease dangerous to public health, shall be imprisoned not more than one year, or fined not more than three hundred dollars.

SEC. 3. A person who brings cattle or other domestic animals into this State, contrary to the provisions of the law relating to the importation of cattle and other domestic animals, shall be fined fifty dollars for each offense, and such importation of each separate animal shall constitute a distinct offense.

SEC. 4. Section 21 of No. 143 of the acts of 1904, is hereby repealed.

SEC. 5. Section 5074 of the Vermont Statutes, sections 3, 6 and 8 of No. 85 of the acts of 1902, and section 10 of No. 143 of the acts of 1904, are hereby repealed except as to offenses committed or prosecutions commenced before this act takes effect, but as to such offenses and prosecutions such sections shall continue and remain in force.

SEC. 6. This act shall take effect from its passage.

Approved December 19, 1906.

AN ACT TO PROMOTE THE HORTICULTURAL INTERESTS OF VERMONT.

SECTION
1. $500.00 appropriated annually.
2. Payment of appropriation.
3. Annual meeting, premiums.
4. Report to auditor of accounts by the secretary.

SECTION
5. Deduction of appropriation through injudicious expenditures.
6. Report of secretary.

It is hereby enacted by the General Assembly of the State of Vermont:

SECTION 1. The sum of five hundred dollars ($500.00) is hereby appropriated annually to the Vermont State Horticultural Society for the purpose of promoting, encouraging and developing the horticultural interests of the State.

SEC. 2. The auditor of accounts is hereby directed to draw an order on the State treasurer in favor of the treasurer of the Vermont State Horticultural Society for the first payment of this appropriation on the second day of January, 1905, and annually thereafter so long as the conditions hereinafter provided shall be complied with.

SEC. 3. Said Vermont State Horticultural Society thall hold an annual meeting of at least two days' duration, at some town or city in this State which is easy of access to the people, and in some convenient and suitable building. At said meeting men of horticultural note shall be engaged to teach and discuss the best methods of fruit, vegetable and flower culture, as well as the handling and marketing of the product. At the said annual meeting premiums not to exceed one hundred dollars shall be offered for the best exhibits of fruits, vegetables and flowers, said premiums to be awarded by disinterested and expert judges, and paid by the treasurer of the Vermont State Horticultural Society.

SEC. 4. The Secretary of the Vermont State Horticultural Society shall on or before December 1, 1905, and annually thereafter, make a detailed and itemized account to the State auditor of accounts of the receipts and expenses of said society, which accounts shall be approved and countersigned by the treasurer and auditor of said society.

SEC. 5. If in any year it shall appear to the State auditor of accounts that any part of the preceding annual appropriation has been injudiciously expended, then such part or amount may be deducted from the order for the ensuing annual appropriation.

SEC. 6. The report of the annual meeting of the Vermont State Horticultural Society shall be published by the State Board of Agriculture in their annual report as provided in section two hundred forty-seven of Vermont Statutes.

SEC. 7. This act shall take effect from its passage.

Approved December 9, 1904.

AN ACT RELATING TO THE PRESERVATION OF FORESTS.

SECTION
1. Forestry commissioner.
2. Report of commissioner.
3. First selectman to be forest fire warden, duties of, expenses of.
4. Fire warden, powers of, expenses.
5. Penalty for leaving fire in woods.

SECTION
6. Posting of notices.
7. Report of fire wardens.
8. Bulletins regarding control of forest fires.
9. Control of fires kindled for burning brush.
10. Penalty for violation of act.

It is hereby enacted by the General Assembly of the State of Vermont:

SECTION 1. The Governor of the State shall, within ten days after the appointment, and confirmation by the senate, of the members of the Board of Argiculture, designate one of said members to act as forestry commissioner of the State of Vermont. It shall be the duty of the member of the Board of Agriculture so designated to perform all acts and duties hereinafter required of the forestry commissioner during his term of office as member of the Board of Agriculture.

SEC. 2. The forestry commissioner shall biennially, on or before the first day of July in the year in which the legislature meets, report to the Governor his acts under this law, the material facts he may have ascertained and such recommendations as he deems pertinent. Such report shall be printed in the report of the secretary of the Board of Agriculture.

SEC. 3. The first selectman in each town shall be, and is hereby constituted, forest fire warden in and for his town. The services of such selectman while acting as fire warden shall be paid for by the town at the same rate as he is paid for his other official services. It shall be the duty of the forest fire warden of a town in which a forest fire is discovered to take such measures as may be necessary for its prompt control and extinguishment. For this purpose he may call upon any person in the town for assistance, and persons so assisting shall be paid by the town at the rate of fifteen cents per hour. But no town shall be held liable in any year for an amount greater than five per cent. on its grand list for the purpose of extinguishing forest fires. Expenditures in any town for the purpose of extinguishing forest fires in excess of the amount above authorized shall, if authorized by the State forestry commissioner, be paid by the State. On receipt of the bills for such expenses duly approved by the forestry commissioner, the auditor shall draw an order for same which shall be paid by the State treasurer out of the general funds of the State. If any person called upon by a forest fire warden for assistance, and not excused for good reason, fails or refuses to so assist he shall be fined not exceeding ten dollars.

SEC. 4. The State forestry commissioner may in his discretion appoint for an unorganized town or gore a fire warden who shall hold office for one year from the date of his appointment and who shall have the same powers and duties as a town fire warden and may also call for assistance on persons not residents of the unorganized town or gore in question. Expenses incurred by fire wardens for such unorganized towns and gores in extinguishing forest fires, shall on approval of the forestry commission, be paid by the State. No bills, however, in any one such town or gore shall exceed one hundred dollars in a single year.

SEC. 5. Any person or persons who builds a fire in or adjoining any woods in this State shall, before leaving the same, totally extinguish such fire. Any person failing to comply with this section shall be fined not more than fifty dollars, or imprisoned not more than thirty days, or both.

SEC. 6. The forestry commissioner shall have printed upon cloth in large letters notices containing proper warning as to danger of forest fires and containing the provisions of the preceding section. These notices shall be furnished to all fire wardens in the State who shall post them in suitable places.

These notices may also be furnished to private land owners.

SEC. 7. The fire wardens shall keep a record of all acts done by them under this law, of the amount of expenses incurred, of the number of fires, their causes, the areas burned over and the character and amount of damage done by forest fires in their jurisdiction. Once a year during the month of January they shall report to the State forestry commissioner these facts on blanks to be furnished by him.

SEC. 8. The State forestry commissioner may prepare or have prepared bulletins or circulars treating of forest fires, their prevention, the best methods of controlling and extinguishing the same, the laws of the State on the subject, the care of woodlands, the best methods of lumbering, the promotion and preservation of forest growth and kindred subjects, which circulars and bulletins may be printed and circulated at the expense of the State, and may be included in the printed report of the Secretary of the Board of Agriculture.

SEC. 9. Fires kindled for the purpose of burning brush or for other lawful purpose must only be kindled at such times and under such conditions as will enable the parties starting them to keep them entirely under control.

SEC. 10. Any officer neglecting to perform the duties imposed on him by this act, any person willfully tearing down or defacing any notice posted up under the provisions of this act, and any person disobeying any provision of this act for which a penalty is not otherwise provided shall be fined not more than ten dollars for each offense. It shall be the duty of the fire warden in each town to enter complaint before the town grand juror or other proper officer against any person guilty of an offense against the provisions of this act.

Approved December 9, 1904.

AN ACT TO ENCOURAGE PLANTING AND PERPETUATING FORESTS.

SECTION
1. Exemption of waste land from taxation.
2. Forestry commissioner to issue rules for planting waste lands.
3. Certificate of planting waste lands filed in town clerk's office.

SECTION
4. Duty of listers.
5. Violation of regulations by owner of land, revocation of certificate.
6. Report to legislature.

It is hereby enacted by the General Assembly of the State of Vermont:

SECTION 1. All waste or uncultivated land which shall be planted with timber of forest trees under the provisions and regulations as provided in this act shall be exempt from taxation for a term of ten years, commencing on the first day of April in the second year after such lands shall have been so planted as herein provided.

SEC. 2. The State forestry commissioner, if there shall be such an officer, otherwise the State Board of Agriculture, shall issue and promulgate rules and regulations for the planting of waste or uncultivated land with timber or forest trees, shall in such rules and regulations fix the minimum number to be planted to the acre, the kinds of trees to be planted, the time of year when the same shall be done and how proof thereof shall be made to such commissioner or board; shall make regulations for the care and preservation of such planted trees during the term of exemption and shall furnish a printed copy of such rules and regulations to any such person applying for the same.

SEC. 3. Immediately upon receiving proof according to the rules and regulations so made of the planting of any waste or uncultivated land with timber or forest trees, said commissioner or said board shall furnish to the town clerk of the town where such land is situated a certificate of such planting, describing therein the land so planted, and the exemption from taxation herein provided shall be from the first day of April in the second year after such certificate is filed.

SEC. 4: The listers of any town in apportioning the grand list of any year shall note therein the exemption of any lands in said town under the provisions of this act.

SEC. 5. If the owner or occupant of such exempt land shall, at any time, during the period of such exemption, forfeit or knowingly permit to be forfeited any of the rules or regulations of the forestry commission or State Board of Agriculture regarding the replanting or care and preservation of the timber of forest trees so planted, the said commissioner or board shall revoke the certificate of exemption filed as provided in section 3 of this act and shall give notice of such revocation in writing to the town clerk of the town where the lands are located, which notice so filed shall operate to abrogate an annul such exemption from thence forward.

SEC. 6. The said commissioner or said board shall make an annual report to the legislature of all doings under this act, with a detailed statement of the exemptions granted thereunder.

Approved December 7, 1904.

AN ACT TO REQUIRE A LICENSE FROM DEALERS IN EVERGREEN TREES.

It is hereby enacted by the General Assembly of the State of Vermont:

SECTION 1. A person, firm or corporation that buys or sells more than twenty evergreen trees in any one year, of less than six inches in diameter at the butt as cut not grown upon his own land shall be deemed a dealer in evergreen trees.

SEC. 2. A person, firm or corporation shall, before becoming a dealer in evergreen trees, procure a license therefor as provided in this act.

SEC. 3. A dealer in evergreen trees shall pay, annually, a license fee of fifty dollars to the clerk of the county in which he does business, and said clerk shall, upon receipt thereof issue a license to such dealer as follows:

State of Vermont, County of..........................,

Be it known that license is hereby granted to A. B., on application, to be a dealer in evergreen trees in this State for one year from date hereof, and he has paid therefor the sum of fifty dollars.

Given under my hand this........day of...... A. D. 19...

.........................., County Clerk.

SEC. 4. The county clerk shall register in a book kept for that purpose the number of each license granted, the name and residence of licensee, the time granted, the date and sum paid therefor.

SEC. 5. A license granted as aforesaid shall be in force one year from the date thereof and no longer.

SEC. 6. All moneys received by county clerks for licenses granted under the provisions of this act shall be turned over to the treasurer of the county where granted and shall be used for the general purpose of the county.

SEC. 7. A person, firm or corporation that becomes a dealer in evergreen trees without procuring a license therefor as provided in this act shall be fined not more than three hundred dollars, and each sale shall be construed as a separate offense.

SEC. 8. This act shall take effect from its passage.

Approved December 14, 1906.

AN ACT TO REGULATE THE SALE OF COMMERCIAL FERTILIZERS.

It is hereby enacted by the General Assembly of the State of Vermont:

SECTION 1. The term "commercial fertilizer" as used in this act, shall be taken to mean compounds and manufactured substances containing, or represented as containing, two or more of the ingredients mentioned in section three of this act, but shall not apply to the separate ingredients used to manufacture the same, or to bone meal, land plaster, lime, or any substance the product of nature, which has not been compounded.

SEC. 2. The term "importer", as used in this act, shall be taken to mean all who procure or sell commercial fertilizers made in other states.

SEC. 3. Every lot or parcel of commercial fertilizer, sold, offered or exposed for sale in this State, the retail price of which is ten dollars or more per ton, shall be accompanied by a plainly printed and legible statement, clearly and truly certifying the number of net pounds of fertilizer in a package, the name, brand or trade-mark under which the fertilizer is sold, the name and address of the manufacturer or importer, and a chemical analysis stating the minimum percentages of nitrogen, of potash soluble in distilled water, and of soluble, reverted, insoluble, available and total phosphoric acids, and the maximum percentage of chlorin or such of these as are claimed to be present; the several constituents to be determined by the methods adopted at the time by the association of official agricultural chemists.

SEC. 4. The manufacturer, importer, agent or seller of a commercial fertilizer, the retail price of which is ten dollars or more per ton, shall, before the same is sold, offered or exposed for sale, annually, in the month of December, pay the director of the Vermont Agricultural Experiment Station a license fee of one hundred dollars. Said director, on the receipt of such fee, shall issue to such a license permitting the sale in the State of not to exceed five brands of commercial fertilizer, all of which brands shall be the product of the licensee. If any manufacturer, importer, agent or seller desires to sell, offer or expose for sale more than this number of brands, he shall annually, in the month of December, pay a license fee of twenty dollars for each and every brand or kind of commercial fertilizer, bearing a distinctive name, brand or trade mark, which said manufacturer, importer, agent or seller is to sell, offer or expose for sale in excess of five; provided that if said fertilizer is claimed to or does contain phosphoric acid and either nitrogen or potash only, the license fee shall be fifteen dollars. Said director, on the receipt of each such fee, shall issue to such licensee a license for the sale of the brand or kind of commercial fertilizer for which the fee is paid.

SEC. 5. Whenever a manufacturer, importer, agent or seller of a commercial fertilizer desires at any time to sell such material and has not paid the license fee therefor in the preceding month of December, as required in section four, he shall pay the license fee prescribed therein before offering or exposing the material for sale. The license fee due in December shall cover and authorize all sales within the State of the brands or kinds of commercial fertilizer specified in the license for the calendar year next succeeding that month. All licenses shall expire on the thirty-first day of December of the year for which they are issued. Whenever the manufacturer, importer or shipper of a commercial fertilizer or material used for manurial purposes shall have paid the license fee, no agent or seller of said manufacturer, importer or shipper shall be required to pay such fee.

SEC. 6. The amount of the license fees received by said director shall be paid by him to the State treasurer. So much of the fees collected under this act shall be paid by the State treasurer to the treasurer of said experiment station as the director of said experiment station may show by his bills has been expended in performing the duties required by this act, but in no case to exceed the amount of the license fees received by the State treasurer under this act, such payments to be made on or before the thirtieth day of June upon the order of the State auditor, who is hereby directed to draw his order for such purpose. The director shall annually publish a statement of the receipts and expenditures under this act.

SEC. 7. No person shall sell, offer, or expose for sale in this State, leather or its products, hair, wool, waste, garbage, tankage or other inert nitrogenous material, as a fertilizer, or as an ingredient of any fertilizer, unless an explicit printed statement of the fact shall be conspicuously affixed to every package of such fertilizer, and shall accompany every parcel or lot of the same.

SEC. 8. Any person knowingly selling, offering or exposing for sale, a commercial fertilizer, without the statement required by section three of this act, or containing a smaller percentage of any one or more of the ingredients named therein, other than chlorin than is specified on the label, or for the sale of which the license fee specified in section four has not been paid or who fails to comply with any of the sections of this act, subject to the exceptions cited in section twelve of this act, shall, on conviction by a court of competent jurisdiction, be fined not more than fifty dollars for the first offense, and not more than one hundred dollars for each subsequent offense.

SEC. 9. The director of the Vermont Agricultural Experiment Station is hereby fully empowered and authorized, in person or by deputy, to enter any premises where commercial fertilizers are stored, and to take a sample not exceeding two pounds in weight for analysis from any lot or package of any commercial fertilizer, or material used for manurial purposes, which may be in the possession of any manufacturer, importer, agent or dealer. Said sample shall not be less than five per cent. of the whole lot inspected, and shall be thoroughly mixed and placed in a suitable vessel, carefully sealed, and a label placed thereon stating the name or brand of the fertilizer or material sampled, the name of the party from whose stock the sample was drawn, and the time and place of drawing, and said label shall be signed by the director or his deputy, provided however, that whenever requested said sample shall be taken in duplicate and carefully sealed in the presence of the party or parties in interest or their representative, in which case one of said duplicate samples shall be retained by the director and one by the party whose stock was sampled. The samples retained by the director shall be for comparison with the certified statement named in section three of this act.

SEC. 10. Said director shall cause at least one sample of each brand or kind of fertilizer collected as herein provided to be analyzed annually and the results, together with such additional information in relation to the character, composition, value and use of said fertilizer as circumstances may advise, shall be published in reports, bulletins, special circulars or elsewhere, as promptly as the progress of the analysis will allow and as frequently as time and means permit.

SEC. 11. Any person who shall hinder, impede or obstruct the director or his deputy, while in the discharge of his duty under this act, shall be deemed guilty of misdemeanor, and, upon conviction thereof, shall be fined not less than twenty-five dollars nor more than one hundred dollars for each offense.

SEC. 12. The director of the Vermont Agricultural Experiment Station upon ascertaining any violation of this act for the first time shall forthwith notify the manufacturers or importers in writing and give them not less than thirty days thereafter in which to comply with the requirements of this act. In case of second or subsequent violation by the same party or parties, or in case, after a lapse of thirty days, the requirements of this act remain still uncomplied with, it shall be the duty of said director to notify the State's attorney of the county in which the violation of this act is claimed to have occurred to the end that the violator may be prosecuted; but there shall be no prosecution in relation to the quality of the fertilizer or fertilizing material, if the same shall be found to be substantially equivalent to the statement of analysis made by the manufacturers or importers.

SEC. 13. For all the purposes of this act, fertilizers shall be considered as distinct brands when differing either in guaranteed composition, trade mark, name, or in any other characteristic method of marking of whatever nature.

SEC. 14. This act shall not affect parties manufacturing, importing, or purchasing fertilizers for their own use and not to sell in this State.

SEC. 15. Sections 4346 to 4359 inclusive of the Vermont Statutes and all acts or parts of acts inconsistent herewith are hereby repealed.

SEC. 16. This act shall take effect from its passage.

Approved December 11, 1902.

AN ACT FOR THE PROTECTION OF DAIRYMEN, RELATING TO TESTING MILK AND CREAM.

It is hereby enacted by the General Assembly of the State of Vermont:

SECTION 1. All bottles, pipettes or other measuring glasses used by any person, firm or corporation, or their agents or employees, at any creamery, butter factory, cheese factory, or condensed milk factory, or elsewhere in this State, in determining by Babcock test, or by any other test, the value of milk or cream received from different persons or parties at such creameries or factories, shall, before such use be tested for accuracy of measurement and for accuracy of the per cent. scale marked thereon. It shall be the duty of the superintendent of the dairy school of the Univeristy of Vermont and State Agricultural College to designate some competent person to test the accuracy of such bottles, pipettes, or other measuring glasses. The person thus designated shall so mark such bottles, pipettes, or other measuring glasses as are found correct in marks or characters which cannot be erased, which marks or characters shall stand as proof that they have been tested; and no incorrect bottles, pipettes or other glasses shall thus be marked. The superintendent of the dairy school shall receive for such service the actual cost incurred and no more, the same to be paid by the persons or corporations for whom it is done.

SEC. 2. Each and every person, who, either for himself or in the employ of any other person, firm or corporation, manipulates the Bacbock test, or any other test, whether mechanical or chemical, for the purpose of measuring the contents of butterfat in milk or cream as a basis for apportioning the value of such milk or cream, or the butter or cheese made from the same shall secure a certificate from the superintendent of the dairy school of the University of Vermont and State Agricultural College that he or she is competent and well qualified to perform such work. The rules and regulations in the application for such certificate and in granting of the same shall be such as the superintendent of the school may arrange. The fee for issuing such certificates shall in no case exceed one dollar, the same to be paid by the applicant to the superintendent of the Dairy School and to be used by the superintendent in meeting the expenses incurred under this section.

SEC. 3. Any person or persons violating any of the provisions of this act shall, on conviction in court of competent jurisdiction, be fined not more than twenty-five dollars for the first offense, and not more than fifty dollars for each subsequent offense. It shall be the duty of every sheriff, deputy sheriff and constable to institute complaint against any person or persons violating any of the provisions of this act, and on conviction one-half of the fine shall go to the complainant and the balance to the State.

Approved November 19, 1898.

AN ACT IN RELATION TO CREAMERIES AND CHEESE FACTORIES AND THE MANAGEMENT OF THE SAME.

SECTION
1. Owners of creameries to deliver to patrons monthly detailed statements.
2. Creameries must weigh, sample and test milk.
3. Owners of cheese factories to deliver to patrons detailed monthly statement.

SECTION
4–5. Owners of creameries to make monthly statement of total receipts of milk and pounds of butter produced.
6. Penalty for neglecting to comply with act.
7. Act takes effect January 1, 1899.

It is hereby enacted by the General Assembly of the State of Vermont:

SECTION 1. Every owner, operator or manager of a creamery in this State whether co-operative or proprietary, shall monthly make and deliver to each of the patrons of said creamery a statement of the number of pounds of milk or cream such patron delivers for that month, together with the test, pounds of butter-fat, gain per cent. from the churn, and actual pounds of butter produced from said milk, and the price paid for the same shall be computed on the actual pounds of butter.

SEC. 2. Any owner, operator or manager of any creamery, whether co-operative or proprietary, who sells or otherwise disposes of any of the milk received at such creameries shall weigh and carefully sample the same and shall test such samples for the purpose of ascertaining the number of pounds of butter-fat in such milk sold, or otherwise disposed of, and the gain per cent. which is found to be the gain from the churn for that month shall be the one used in ascertaining the actual number of pounds of butter produced from such milk as is sold or otherwise disposed of.

SEC. 3. The owner, operator or manager of any cheese factory in the State, whether co-operative or proprietary, shall make and deliver to each of the patrons of said factory a statement representing the number of pounds of milk he delivers for each month, together with the test and actual number of pounds of cheese produced by such milk for said month. And the price paid for the same shall be computed on actual number of pounds of cheese.

SEC. 4. Every owner, operator or manager of a creamery in this State, whether co-operative or proprietary, shall make a statement each month of the total number of pounds of milk received for that month, together with the gain per cent. from the churn, and the actual number of pounds of butter produced from said milk and cream.

SEC. 5. The statement mentioned in the preceding section shall be posted in a conspicuous place in said creameries.

SEC 6. Any manager or proprietor of any creamery in the State, who fails to comply with any of the provisions of this act, shall, on conviction in a court of competent jurisdiction, be fined not less than fifty dollars nor more than two hundred dollars for each offense.

SEC. 7. This act shall take effect January 1, 1899.

Approved November 29, 1898.

AN ACT TO PROTECT MILK DEALERS AND CONSUMERS AGAINST THE UNLAWFUL USE AND DESTRUCTION OF MILK CANS AND OTHER RECEPTACLES.

SECTION
1. Persons having names on cans may file in town clerk's office description of name; publication in newspaper.
2. Persons using such can so marked, fined for each can so used.
3. Persons mutilating such can, fined or imprisoned.
4. Person putting foul matter into cans punished.
5. Persons concealing can brought before a justice for hearing: search warrant.

It is hereby enacted by the General Assembly of the State of Vermont:

SECTION 1. All persons and corporations engaged in buying, selling or dealing in milk or cream in cans, jugs, bottles or jars, with their names or other marks or devices, branded, engraved, blown, or otherwise produced in a permanent manner in or upon such cans, jugs, bottles, or jars, may file in the office of the clerk of the city or town in which their principal place of business is situated, a description of the name or names, mark or marks, device or devices so used by them, and cause such description to be published once each week for four weeks successively in a newspaper published in the city or town in which said description has been filed as aforesaid except that where there is no newspaper published in such city or town then such publication may be made in any newspaper published in the county in which such city or town is situated.

SEC. 2. Whoever without the consent of the owner takes and detains or uses in his business, sells, disposes of, buys, conceals or traffics in any milk or cream can, jug, bottle, or jar, the owner of which has complied with the provisions relating thereto in section one of this act, shall be punished for the first offense by a fine not exceeding five dollars, or by punishment in the house of correction for a term not exceeding sixty days, for each can, jug, bottle or jar so taken, and detained or used in his business, sold, disposed of, bought, concealed or trafficked in, and for any subsequent offense by a fine not exceeding ten dollars, or by imprisonment in the house of correction for a term not exceeding six months, for each can, jug, bottle or jar so taken and detained or used in his business, sold, disposed of, bought, concealed or trafficked in as aforesaid. Possession by any person in the transaction of his business of any such article, the owner of which has complied with the provisions of section one of this act, shall constitute prima facie evidence of the unlawful taking, use, detention, possession of or traffic in the same within the meaning of this act.

SEC. 3. Whoever without the consent of any owner who has complied with the provisions of section one of this act wilfully destroys, mutilates, or defaces any can, jug, bottle or jar bearing such owner's name, mark or device, or wilfully erases, mars, covers, or changes any word or mark branded, engraved, blown or otherwise produced, in a permanent manner in or upon any such can, jug, bottle or jar, shall be punished for the first offense by a fine not exceeding five dollars, or by imprisonment in the house of correction for a term not exceeding sixty days, for each can, jug, bottle or jar so destroyed, mutilated or defaced, or for each can, jug, bottle or jar upon which any word or mark has been erased, marred, covered or changed as aforesaid; and for any subsequent offense by a fine not exceeding ten dollars, or by imprisonment in the house of correction for a term not exceeding six months, for each can, jug, bottle or jar so destroyed, mutilated or defaced, or for each can, jug, bottle or jar upon which any word or mark has been erased, marred, covered or changed as aforesaid.

SEC. 4. Whoever puts any unclean or foul substance or matter into any milk or cream can, jug, bottle or jar, the owner of which has complied with the provisions of section one of this act, shall be punished for the first offense by a fine of not less than fifty cents, nor more than five dollars, for each can, jug, bottle or jar so defiled; and for any subsequent offense by a fine of not less than two dollars nor more than twenty dollars, for each can, jug, bottle or jar so defiled.

SEC. 5. Whenever any person or corporation having complied with the provisions of section one of this act, or mutilates, destroys or polutes any butter crate or carriers, or the agent of any such person or corporation, shall make oath before any justice of the peace or municipal court, that he has reason to believe and does believe that any person or corporation has wrongfully in possession or is secreting any of his or its milk cans, jugs, bottles or jars, marked and described as provided in section one of this act, said justice of the peace or municipal court shall, if satisfied that there is reasonable cause for such belief, issue a search warrant to discover and obtain the same, and may also cause to be brought before him the person or an agent or employee of the corporation in whose possession such cans, jugs, bottles, or jars are found, and shall thereupon inquire into the circumstances of such possession; and if said justice of the peace or municipal court finds that such person or corporation has been guilty of a wilful violation of sections two, three or four of this act he shall impose the penalty prescribed in the section or sections so violated, and shall also award to the owner possession of the property taken upon such search warrant.

Approved November 11, 1902.

AN ACT TO PROHIBIT THE MISUSE OF RECEPTACLES USED IN THE SALE AND IN THE CONVEYANCE OF MILK.

It is hereby enacted by the General Assembly of the State of Vermont:

SECTION 1. A person who, by himself, his agent or servant, or as the servant or agent of any other person co-partnership or corporation, having the custody of a receptacle used as a container for milk destined for sale or for use in the manufacture of any food product destined for sale, places, or causes or permits to be placed or suffers to remain therein any offal, swill, kerosene, vegetable matter, or any article or substance other than milk, skimmed milk, buttermilk, cream or water or other agent used for cleansing such receptacle, shall be fined not more than ten dollars for each receptacle so misused.

SEC. 2. A person who, by himself or by his servant or agent, or as the servant or agent of any other person, co-partnership or corporation, sends, ships, returns or delivers, or causes or permits to be sent, shipped, returned or delivered, or in any way aids or assists therein, to a producer of milk or other person, any receptacle used as a container of milk, containing any offal, swill, kerosene, vegetable matter, or any other offensive material or substance shall be fined not more than ten dollars for each offense.

SEC. 3. A person who receives from a person, co-partnership or corporation any receptacle used or to be used as a container of milk containing any offal, swill, kerosene, vegetable matter, decayed or decomposed matter or any other offensive material or substance, shall forthwith submit such receptacle to the health officer of the town where such receptacle is received, for examination, and if such health officer finds such receptacle to be in such condition as to be a menace to the public health it shall be adjudged a nuisance and the health officer shall act relative thereto, as provided in chapter one hundred ninety-three of the Vermont Statutes.

SEC. 4. A person who fails to submit to the health officer a receptacle used or to be used as a container of milk, as directed in section three of this act, shall be fined not more than five dollars for each offense.

SEC. 5. This act shall take effect from its passage.

Approved November 22, 1906.

AN ACT TO REGULATE THE SALE OF CONCENTRATED COMMERCIAL FEEDING STUFFS.

SECTION
1. Every lot of concentrated feeding-stuff shall have printed statement affixed thereto; contents of statement.
2. Concentrated commercial feeding-stuff defined.
3. Term does not include certain articles.
4. Analysis of feeding-stuffs; payment for by the State.
5. Payment by state treasurer to director.
6. Penalty for selling without statement.
7. Director of experiment station may enter premises where feeding-stuff is sold and take sample.

SECTION
8. Penalty for obstructing director in discharge of his duties.
9. Analysis of sample.
10. Adulteration of grain; penalty for.
11. Manufacturer notified if feeding-stuff is found adulterated; prosecution of seller.
12. Prosecution of parties in case of second offense.
13. Distinct brands.
14. Not to affect stock on hand.
15. Importer defined.
16. No. 83 Acts of 1898 repealed.
17. Takes effect December 1, 1902.

It is hereby enacted by the General Assembly of the State of Vermont:

SECTION 1. Every lot or parcel of concentrated feeding stuff as defined in section two of this act, used for feeding farm live stock, sold, offered or exposed for sale in this State, shall have affixed thereunto, in a conspicuous place on the outside thereof, a legible and plainly printed statement clearly and truly certifying the number and net pounds of feeding stuff in a package, the name, brand or trade mark under which the article is sold, the name and address of the manufacturer or importer, and a chemical analysis stating the minimum percentages it contains of crude protein, allowing one per cent. of nitrogen to equal six and one-fourth per cent. of protein, and of crude fat and the maximum percentage it contains of crude fibre, the several constituents to be determined by the methods adopted at the time by the association of official agricultural chemists; provided the statement of the percentage of crude fat may be omitted if it does not exceed three per cent., and that of the crude fibre if it does not exceed ten per cent. If the feeding stuff is sold at retail in bulk or put up in packages belonging to the purchaser, the agent or dealer shall, upon request of the purchaser, furnish him with the certified statement named in this section.

SEC. 2. The term concentrated commercial feeding-stuff, as here used, shall include linseed meals, cottonseed meals, cottonseed feeds, pea meals, cocoanut meals, gluten meals, gluten feeds, maize feeds, starch feeds, sugar feeds, dried distillers' grains, dried brewers' grains, malt sprouts, hominy feeds, cerealine feeds, rice meals, oat feeds, corn and oat chops, corn and oat feeds, corn bran, ground beef or fish, scraps, meat and bone meals, mixed feeds other than those composed solely of wheat bran and middlings mixed together or with pure grains, provenders other than those composed of pure grains ground together, condimental stock and poultry foods, patented proprietary or trademarked stock and poultry foods, and all other materials of a similiar nature not included in section three of this act.

SEC. 3. The term concentrated commercial feeding-stuff, as here used, shall not include hays and straws, the whole seed nor the unmixed meals made directly from the entire grains of wheat, rye, barley, oats, Indian corn, buckwheat, India wheat and broom corn. Neither shall it include wheat, rye and buckwheat brans or middlings not mixed with other substances, but sold separately as distinct articles of commerce, nor wheat bran and middlings mixed together and not mixed with any other substances, nor pure grains ground together, when unmixed with substances other than wheat, rye or buckwheat brans or middlings.

SEC. 4. The auditor of accounts is hereby directed to draw an order on the State treasurer for the sum of five hundred dollars annually in favor of the treasurer of the University of Vermont State Agricultural College, the same or such portion thereof as is found necessary, to be expended by the experiment station in the analysis of concentrated commercial feeding-stuffs.

SEC. 5. So much of the appropriation granted under this act shall be paid by the State treasurer to the treasurer of said experiment station as the director of said experiment station may show by his bills has been expended in performing the duties required by this act, but in no case to exceed the amount of the appropriation received from the State treasurer under this act, such payment to be made quarterly upon the order of the State auditor, who is hereby directed to draw his order for such purpose. The director shall annually publish a statement of the receipts and expenditures under this act.

SEC. 6. Any manufacturer, importer, agent or person knowingly selling, offering or exposing for sale any concentrated commercial feeding stuff, as defined in section two of this act, or without the statement required by section one of this act, or stating that said feeding-stuff contains substantially a larger percentage of crude protein or crude fat, or substantially a smaller percentage of crude fibre, than is contained therein, shall, on conviction in a court of competent jurisdiction, be fined not more than fifty dollars for the first offense, and not more than one hundred dollars for each subsequent offense.

SEC. 7. The director of the Vermont Agricultural Experiment Station is hereby fully empowered and authorized in person or by deputy to enter any premises where feeding-stuffs are stored and to take a sample not exceeding two pounds in weight for an analysis from any lot or package of any commercial feeding-stuff, including the excepted materials named in section three, which may be in the possession of any manufacturer, importer, agent or dealer in this State. Said sample shall be taken from a parcel or number of packages which shall be not less than five per cent. of the whole lot inspected, and shall be thoroughly mixed and placed in a suitable vessel, carefully sealed and a label placed thereon, stating the name or brand of the feeding-stuff or material sampled, the name of the party from whose stock the sample was drawn, and the time and place of drawing. And said label shall be signed by the director or his deputy; provided however, that whenever requested said sample shall be taken in duplicate and carefully sealed in the presence of the party or parties in interest or their representative, in which case one of said duplicate samples shall be retained by the director and the other by the party whose stock was sampled. The sample or samples retained by the director shall be for comparison with the certified statement named in section one of this act.

SEC. 8. Any person who shall hinder, impede, or obstruct the director or his deputy, while in discharge of his duty under this act shall be deemed guilty of misdemeanor, and upon conviction thereof, shall be fined not less than twenty-five dollars nor more than one hundred dollars for each offense.

SEC. 9. Said director shall cause at least one sample of each brand or kind of feeding-stuff, collected as herein provided, to be analyzed annually. Said analysis may include determination of crude protein, crude fat, and such other ingredients as it is deemed advisable at any time to determine. The results of the analysis of the sample or samples collected as herein provided, together with such additional information in relation to the character, composition and use thereof as circumstances may advise, shall be published in reports, bulletins, special circulars, or elsewhere annually or more frequently as is deemed advisable.

SEC. 10. Any person who shall adulterate any whole or ground grain with milling or manufactured offals, or with any foreign substance whatever, or any bran or middlings made from the several grains or the mixtures of wheat bran, and middlings known in trade as mixed feed with any foreign substance whatever, for the purpose of sale, unless the true composition, mixture or adulteration thereof is plainly marked or indicated upon the packages containing the same, or in which it is offered for sale; or any person who knowingly sells or offers for sale any whole or ground grain, bran or middlings which have been so adulterated unless the true composition, mixture or adulteration is plainly marked or indicated upon the package containing the same, or in which it is offered for sale, shall, on conviction in a court of competent jurisdiction, be fined not less than twenty-five or more than one hundred dollars for each offense.

SEC. 11. If any feeding-stuff, not guaranteed as provided in section one of this act, is proved on analysis to be adulterated the director shall give to the manufacturer, importer, agent or seller, the thirty days' notice hereinafter provided for in section twelve of this act, and upon their failure to comply with the law within that time, shall notify the State's attorney for the county in which said feeding-stuff was offered for sale, to the end that the violator may be prosecuted.

SEC. 12. The director of the Vermont Agricultural Experiment Station, upon ascertaining any violation of this act for the first time, shall forthwith notify the manufacturers or importers in writing and give them not less than thirty days thereafter in which to comply with the requirements of this act. In cases of second or subsequent violation by the same party or parties, or in case, after a lapse of thirty days, and the requirements of this act remain still uncomplied with, it shall be the duty of said director to notify the State's attorney of the county in which the violation of this act is claimed to have occurred, to the end that the violator may be prosecuted: but there shall be no prosecution in relation to the quality of any commercial feeding-stuff if the same shall be found to be substantially equivalent to the statement of analysis made by the manufacturers or importers.

SEC. 13. For all the purposes of this act commercial feeding-stuffs shall be considered as distinct brands when differing either in guaranteed composition, trade mark, name, or in any other characteristic method of marking of whatever nature.

SEC. 14. This act shall not affect stock on hand held by dealers December first, 1902, nor parties manufacturing, importing or purchasing feeding-stuffs for their own use and not to sell in this State.

SEC. 15. The term "importer," for all the purposes of this act, shall be taken to mean all who procure or sell concentrated commercial feeding-stuffs made in other states.

SEC. 16. Number eighty-three of the acts of 1898, and all acts or parts of acts inconsistent herewith are hereby repealed.

SEC. 17. This act shall take effect December 1, 1902.

Approved December 10, 1902.

AN ACT FOR THE PROTECTION OF HORSES.

It is hereby enacted by the General Assembly of the State of Vermont:

SECTION 1. Any person knowingly watering or causing to be watered at a public trough or watering place, or feeding or causing to be fed or offering at a public stable for the purpose of hitching with other horses, any horse afflicted with the glanders or any other malignant disease, shall be fined not more than twenty dollars nor less than ten dollars for each offense.

SEC. 2. The selectmen of the town in which such horse is owned shall, upon complaint being made, or may, if aware of the fact, make an examination of the case and if necessary employ a veterinary surgeon at the expense of the town, and if it appears that the horse has the glanders or any other malignant disease, they shall cause the same to be killed at the owner's expense; but the selectmen shall receive the same compensation from the town as in the performance of other town business.

SEC. 3. This act shall take effect from its passage.

Approved December 9, 1904.

AN ACT TO AMEND SECTION 1 OF NO. 150 OF THE ACTS OF 1904 ENTITLED "AN ACT FOR THE PROTECTION OF HORSE BREEDERS."

It is hereby enacted by the General Assembly of the State of Vermont:

SECTION 1. Section 1 of No. 150 of the acts of 1904 is hereby amended so as to read as follows, viz:

SEC. 1. A person who owns, keeps or uses a stallion of two years of age or over for breeding purposes in this State, except for his own mares, shall cause such stallion to be registered in the office of the town clerk of the town in which he is kept or used. The owner or keeper of such stallion shall furnish to the town clerk in the town where such registration is made, a certificate of the name, age, color, size, name of breeder and pedigree in full of such stallion to the third ancestor on the side of both sire and dam, if known, and as much of such information as is not given shall be acknowledged as not known and so stated, and pedigrees given in advertising such stallions shall be as recorded in the town clerk's office. The town clerk shall record such statement in a book kept for that purpose and shall receive from the applicant the sum of fifty cents for each stallion so registered and shall furnish the owner or keeper procuring such registration a certified copy of the same. The owner or keeper of a stallion who fails to comply with the provisions of this act shall be fined not more than fifty dollars nor less than ten dollars and shall receive no compensation for breeding services of such stallion. A person who makes a false certificate under the provisions of this section shall be fined one hundred dollars to the use of the town where such stallion is registered.

SEC. 2. All acts and parts of acts inconsistent with this act are hereby repealed.

SEC. 3. This act shall take effect from its passage.

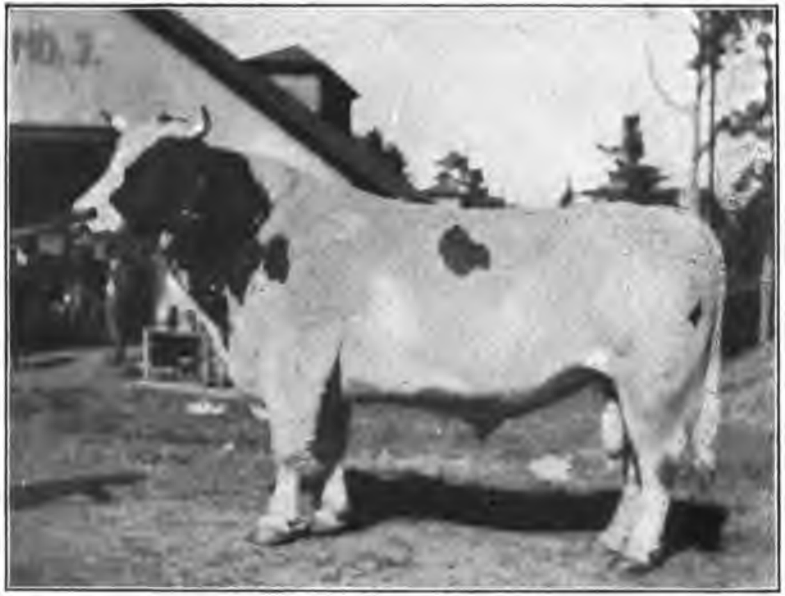
Approved December 11, 1906.

THE BREEDING AND SELECTION OF THE DAIRY COW.

BY B. WALKER MCKEAN.

Dairying is the leading specialty in New England farming. The cow is at the foundation of successful dairying, and her consideration should form the basis of a dairy education. In a sense, necessary upon every farm, and a producer of that best and most perfect of all foods, milk, as her requirements are understood and her capacities appreciated, a measure of advance is made along all lines of farming. Fortunately for all, the dairyman of today has four distinct breeds to select from, and to a great degree, his success will be measured by his ability to take advantage of the results of those who were the pioneers in dairy breeding.

The dairy breeds are the Jerseys, Holsteins, Ayrshires and Guernseys, named about in the order of their numbers in New England. It may not be uninteresting to note the origin of these breeds somewhat in detail. The Island of Jersey, situated in the English Channel, not far from the coast of France, is not larger than the average Vermont town. Its climate is mild and its soil fertile. The business of its people for many years has been the raising of vegetables and flowers for the English markets and the selling of butter and other dairy products. Early in the history of the Island, its cattle were found to possess great uniformity and were noted for their large production of a superior quality of butter. In maintaining and improving the herds, the first step was to form an Island registry association. As soon as this was done, strict laws were passed prohibiting the importation of animals onto the Island except for purposes of immediate slaughter. Through this wise provision the valuable characteristics of the native cattle were not weakened by the infusion of new and warring blood lines, but were strengthened and perpetuated through a wise combination of those rich in the qualities most desired. These laws have been continued to the present day, and the Jersey cow with her strong inherent qualities and her uniform type and color markings, has penetrated into every civilized country, to add to the dairy value of their herds.



Holstein Bull, Koningan Shepard Knight, 23472, Property of Carrabasset Stock Farm, North Anson—A good type of a Dairy Sire, showing stamina, life and prepotency.

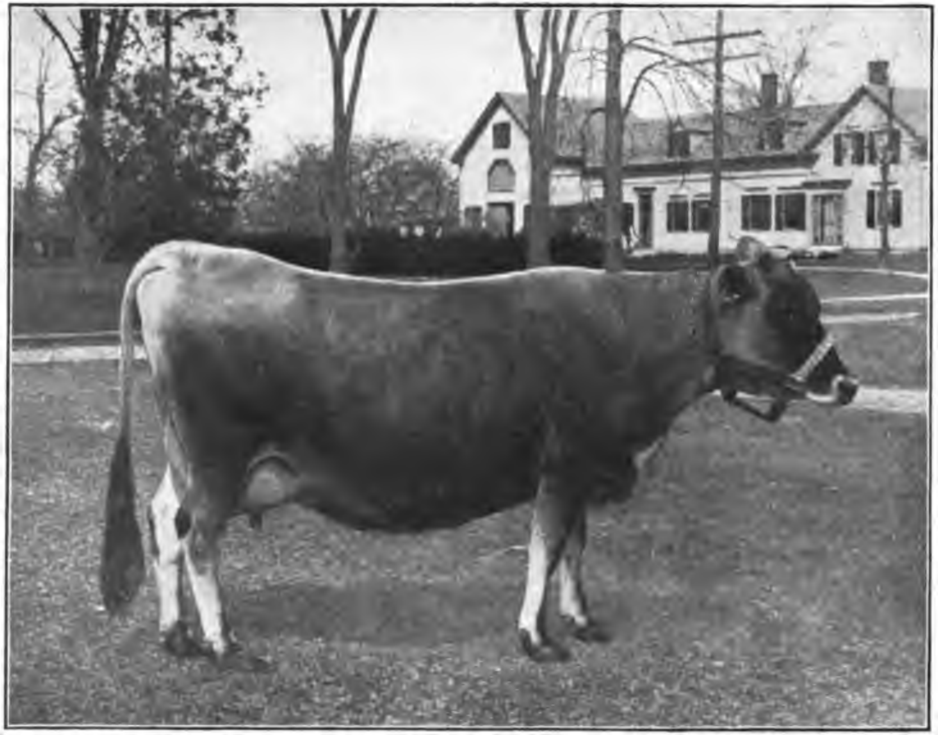
The Holstein Fresian breed is a combination of two ancient dairy breeds of cattle, each with a distinctly bounded home in a county of Holland. These two breeds were rich in their capacity of milk giving, but differed somewhat in color markings. Through judicious breeding, and a union of interests in the forming of a herd register, a breed has been established that has added much to the value of the dairy industry and given to the world its champion milk and butter producer.

The Aryshire breed is the fruit of the necessities of the thrifty Scotch farmers in the county of Ayr, whose fields were not of the best and whose climate was severe. It has been perfected through the same intelligent methods of combining blood lines, rich in the qualities desired. Today the Ayrshire stands as the best all round dairy cow. Many animals of this breed have made themselves famous by their many years of heavy milking. The Ayrshire instinctively takes advantage of every possible means for subsistence. She is the rustler of the dairy breeds, doing her own thinking, and almost universally bringing to her owner good net results.

The Guernsey differs but little from the Jersey, either in her foundation stock or general characteristics. Her home is in practically the same latitude and her breed characteristics very nearly the same. Through a strict rule requiring that no heifers be bred to come in milk till thirty-two months of age, the average size of the breed has been raised, and by judicious selection, the milk and butter have reached a deeper color than the Jerseys. Though less in numbers in New England than any other dairy breed, the Guernsey offers good inducements to those who will study her requirements.

There are two legitimate ways of building up a dairy herd, first through the selection of some breed best adapted to the requirements of the farm and its markets, and handling only thoroughbreds; second, by selecting grade animals of good dairy form and individual capacity, resembling as near as may be the breed into which we wish to build, and then using a thoroughbred male of strong breeding and great prepotency. Under present conditions, and with the prospects for an ever increasing demand for dairy products, I would recommend the former method. There are many reasons for commending the thoroughbred to the young dairyman. There will be a larger value in each animal; it will be valuable for its production and for its capacity to reproduce itself. There will be two chances for a revenue instead of one. There will be a feeling of pride in the ownership that will lead to better care and feeding. There will be a lessening of expense in labor and feed, in proportion to the output of the animal, which is no small consideration in this era of high prices of labor.

The first thing to consider in the forming of a thoroughbred herd is the matter of giving the animals, as far as possible, the same environment and food they received in the formative period. The next, as full a knowledge as possible of blood lines, and the best families to combine, through successive generations of breeding. Next, and not least, the determination to rigidly select, and constantly discard all animals, either as calves or as cows, that do not show evidences of thrift and vigor. Constitution should be regarded as an essential dairy feature. Every animal with a listless appearance, with drooping head and lack-lustre eyes, with light and narrow chest, and poor appetite, should be at once rejected, no matter how pronounced a dairy type she may possess or how fully her milk making functions may have been developed. She will be unprofitable as a producer, and a menace to the health of the future generations of the herd. The well bred dairy cow, of any breed, should have a broad, deep forehead, a long face with expressive eyes, large nostrils, and broad muzzle. The shoulders should be sloping, and the neck clean at the point where it joins them. The head should be carried above the level of the shoulders. There should be ample room for the heart and lungs in a broad, deep chest, with a large heart girth. The top of the shoulders may be narrow, but they should always be broad at the points, with the legs standing well apart. The loin need not be entirely flat, but should broaden backward from the shoulders, and from this broad loin should extend the well sprung ribs, each rib better sprung than the other, until the hips are reached. Here are carried the digestive organs, and unless they are fully developed, the animal can never be a great producer. Now we have reached the point in the body where the milk making organs are carried, and here will be found the greatest development. The point of the hips should be high, they should be broad, to give room for the ample udder; the thighs should be incurving, the hocks well apart. The udder should extend well along the abdomen, and well up between the thighs, with large body connections. The teats should be of good size and well placed, and above all, the cow must be a free, easy, pleasant milker. The udder veins and milk veins should be prominent, the escutcheon wide and distinctly marked. The skin of the thrifty animal will always be soft and mellow, it should be neither too thick nor too thin. The thick skin indicates a sluggish temperament; the thin skin, a lack of vitality. These general rules will follow in the selection of the grade as well as the thoroughbred. In the building up of the grade herd



"Brenda's J. B. Daisy;" Property of Elm Hill Farm, Cumberland Center.—A good Jersey type, showing capacity and constitution—test 18 lbs., 11 oz. butter in one week; over 10,000 lbs. of milk in one year.

the choice of the male is of prime importance. He should combine such blood lines as will intensify the breed characteristics to the greatest possible extent. He must be prepotent; that is, he must possess the power to reproduce his qualities in his offspring as against the warring elements of blood that will be found in the grade cows, and when such a male is found, he may be kept in the herd till the heifers carry seventy-five per cent. of his blood, then with due regard to the principle of rigid selection among the calves, his successor should be chosen from among the descendants of the founders of the family he represents. In this way, we are following the same practices that have been used to develop the dairy breeds, as well as all phenominal producers. It is well for the breeder either of thoroughbreds or of grades to establish a minimum of production, below which no animal will be kept in his herd. By the intelligent use of the scales and tester, we may know our herds as individuals, we may rigidly cull out the poorer and weaker ones. Still, I am opposed on principal to the blind use of any instrument or discovery to determine the value or healthfulness of our herds, and would never condemn a well bred heifer of dairy form on one trial, because the chances are strong that with her second calf, her breeding and inherited functions may assert themselves, and she will become a producer. Neither would I condemn a cow but recently moved from her place of birth, if she fails at the pail, provided she comes from producing ancestors and has the dairy form, because, I contend that whenever these conditions are found in an animal a proper understanding of that animal on the part of her handler will make of her a producer.

In the development of the dairy herd, let us all remember that care and kindness count for more than mechanically balanced rations, and that dairying in its highest estate exists only where there are dairy men and dairy women. Dairy men and dairy women are only those who understand the true conditions of animal nature, and can study the animal with a full appreciation born of sympathy and a kind heart.

CORN CULTURE AND THE SILO.

By B. WALKER McKEAN.

Corn, in its different varieties, is the grandest of all forage crops. America gave it to the world. Botanists for a long time claimed that it was of Asiatic origin, but now admit their mistake. Icelandic explorers, as early as the eleventh century, mentioned its existence; Columbus saw it in Cuba, in 1492; Dr. E. L. Sturdivant says that the English found 200 acres in cultivation by the Indians on Block Island in 1636. The Indians produced various foods and drinks from corn, and had learned to fertilize it on our New England soils by placing fish in the hills at planting.

ITS NATURAL HISTORY.

Corn belongs to the grass family. It has the same pointed stem and narrow leaf, and the same root development. In height it varies from two to twenty-five feet. Its period of ripening varies from less than two to about six months. In rows of kernels on the ears, it varies from two (sometimes seen in Mexico) to thirty. In color, it runs all the way through white, yellow, red, blue and their blended colors. The stalks increase in size from north to south, likewise the height of the ears from the ground. On the bottom lands of Missouri, it is often hard work to reach the ears; while in Maine sweet corn fields, I have seen them within eighteen inches of the ground. Its botanical name is " Zea Mays"; the former word signifies to live. It is well named, a life supporter. The French call it Maiz; we add the e and have our Maize. The word corn has different significations in different countries. In England, it means the various grain crops. In Scotland, it is oats; in some other countries it is wheat; here it means Indian corn alone.

Each variety has its own peculiar field. Pop corn has no competition; sweet corn for green use, or canned, has the field to itself. The dents thrive only in the south; the flints do best in the north. The colors of the kernel depend upon the physical structure, largely; red, blue and black varieties have an opaque outer coating; the yellow and white sorts a transparent one. In the former the oil is supposed to show through, in the latter it is the starch.

ISOTHERMAL LIMITS.

Corn is a subtropical plant. It always thrives best near the northern limits of its possible northern growth. Reports from the National Department of Agriculture show that the three northern New England states lead the country in their per acre production of corn, producing nearly three times as much as some of the southern states.

THE VALUE OF THE CORN CROP.

"Heap high the farmer's winter hoard,
Heap high the golden corn.
For no richer gift has autumn poured
From out her lavish horn."

Reckoning its value from its average yield, under good cultivation, and regarding the corn with the cobs as carrying 10 per cent. of water; and the stover, 20 per cent; we have 8,000 pounds of dry matter per acre. It would require four and one-half tons of hay or nearly fifty tons of mangolds to equal this. Corn also has rare qualities which should be more fully understood. It is very palatable, all animals like it. As the excess amount eaten over a maintenance ration measures the productive capacity of the animal, a palatable food has always an increased value in consequence. Corn is the best of fattening foods. It is, even at this late date, unexcelled as a butter food, when quantity and quality of the butter and the full maintenance of the cow are considered. It is an exceedingly digestible food, and when fed from the field or the silo is very easy to digest.

We all admit the necessity for tillage; corn is the best tillage crop. Machinery can be used more in substitution for muscle, in its culture, than with any other stock food plant. Because of this tillage, corn becomes a renovating crop. It grows most through the season of greatest heat, at the time when soil disintegration is most rapid; for this reason it can find more nourishment outside of the applied plant food.

One other thing in this connection: Corn stalks have more pounds of digestible matter than Timothy hay. Can any farmer afford to waste them?

CORN FOR VERMONT AND FOR NEW ENGLAND.

Too many farmers have become discouraged in their treatment of corn. They have listened to the Syren who has chanted in their ears the possibilities of the level prairies; but shall we give up this king of crops to these new forces? I utter a most decided, No!

Nature has favored New England—Vermont. She has made man the measure of the capacity of any soil, and no where on God's green earth is man's capacity greater than in this favored section. Admitting the first proposition, it naturally follows that no soil will ever be so productive for a long period as that in New England. Brains, energy, capital, must dominate farm production, but can we not improve, even here? Only about 16 per cent. of our available soil is under the plow. This system results in less than a ton of hay per acre. We must shorten rotations, put more land under the plow, put more energy into our agriculture. The coarseness of our soils furnishes ample reason for more tillage, their lack of vegetable matter for more live stock with the resultant vegetable wastes returned to the soil. New England— Vermont, has a large mass of latent plant food in her soil; let this be unlocked by the intelligent and frequent use of the plow.

CORN CULTURE.

In Vermont, western methods must prevail. The horse must supplant the ox; the sulky plow, the walking plow; the check rower, the old method; the riding, two-horse cultivator, the old walking cultivator; modern methods of harvesting and storing by means of machinery and the silo, the old laborious method of hand cutting, shocking, husking, shelling and grinding.

There can be no fixed rule for plowing. Taking all kinds of soils into consideration, the rule will not be far from six or seven inches. Corn is shallow rooted. The surface soil must be fine and fertile. Fall or spring plowing, speaking broadly, is a matter of convenience. On light soils the effort should be to compact; on heavy soils, to loosen. The after tillage should be governed, largely by the same objects. On our clay loam soil. I now cultivate deeper, especially in the early part of the season, than formally. Upon one point we should insist, on all soils and everywhere, we should never cultivate unless the soil is in the right condition. Plowing clay soils when moist glazes them and causes them to form lumps when dry. For corn, farm manure should be applied liberally and thoroughly mixed with the soil, not plowed under nor left on top. Chemicals or commercial fertilizers form an essential aid in corn growing. Active field or plot, experiments and a close study of the various nearby experiment stations will determine the kinds and amounts to use.

THE SEED.

I am glad to see the interest manifested on all sides in seed breeding and seed selection. Good seed is necessary in order to grow profitable crops. The plant feeds the animal; as its cost is diminished or increased, the cost of the animal is affected. There is no other factor in plant life that may cost so little as the choice of good seed. It should be adapted to the needs of the farm, and be the best of its kind. Like the animal, the plant has limits of production; these limits are inherent in the seed. It may be well to set aside a portion of land and use this for seed breeding; planting on it only the choicest specimens of the desired variety, then selecting from among the best, each year. In these selections care should be taken to avoid barren plants. These plants, because of their pollen falling on the silk of an ear bearing stalk, may impress themselves on the productive plants. These plants and all suckers may be removed.

PLANTING CORN.

Corn may suffer from too early and from too late planting Aside from the danger of frost there is danger of retarded growth, which makes it a prey to insects and tends to stunt the plant in the early growth. If planting be too long delayed, an early fall frost may spoil the whole crop. I would rather risk injury from spring then from fall frosts, but would insist upon a good seed bed, dry and warmed by the sun to at least 48 degrees. The depth of planting will be regulated largely by the soil. It is a proper conclusion to cover just as shallow as possible, and secure sufficient moisture for the seed to germinate. For hand picking, corn should be planted in hills at distances apart according to the variety; for silage purposes or for soiling, in drills, the larger growing varieties for this latitude, about two kernels to the foot, the drills about three feet apart. Whenever possible, the rows should extend north and south. More sunlight will be admitted, the corn will grow more evenly and the maturing will be more uniform.

HARVESTING CORN.

As the term is sometimes applied, I would not harvest it, that is, I would not husk it; there are better ways. Husking costs at least eight cents for each bushel of shelled corn; grinding costs five cents more; the shelling and carrying to mill at least five cents more; or eighteen cents in all, without adding a single ounce of food to it. Just think of it and in this age of close competition and high prices for labor, too. Even for a pig, 100 pounds of whole corn makes more growth than 100 pounds of meal; six Experiment Stations attest to this; it is no accident.

Corn may be fed whole from the field until danger of frosting; it can then be cut and put in large trig shocks, and fed from these until late in the winter, or all winter, where snow does not fall too deeply. It may also be fed without waste from the barn, provided ample storage space is available, and there are means for cutting or shredding it as it is used. But, under modern conditions, and with our modern ideas of the value of succulence, as found in this ideal fodder crop, I am very sure we should all turn our attention to the silo as the best means for storing it for feeding, both in winter and through a large part of the summer.

WHEN TO HARVEST.

It should be the thought of every one to save the whole plant, the stalks, blades, etc., as well as the ears; to that end we wish to harvest it at that period of growth in which there may be the largest amount of dry matter. Prof. Caldwell of the Pennsylvania Station, got in dry matter and green weights as follows:

	Tasselled.	Ears Filling.	Glazing.	Mature.
Green weight.....	12,430 lbs.	11,760 lbs.	25,710 lbs.	13,520 lbs.
Dry matter.......	1,561 lbs.	1,641 lbs.	4,264 lbs.	6,360 lbs.

Others have found similar results. This shows conclusively that the harvesting should be delayed till well along between the glazing and maturing periods. This holds good either for field feeding or for the silo. The corn harvester has a place in New England, either through co-operative ownership, or owned by one person, and used for hire in fields of others in the neighborhood or town.

THE SILO.

No paper on the corn plant would be complete without at least a brief consideration of the silo. Its advent into New

England marked an important epoch in her agricultural progress. Dependent as we are upon some previously stored feed for a large part of the year, anything that will lessen its cost and add to its value should be fully welcomed. The silo does both. It affords the cheapest means for storing, and at the same time, places food material in a convenient form for feeding, and in the greatest possible condition of succulence and palatability.

Silos may be built inside the barn, or as an outside building; they may be built square, oblong, octagonal or oval; of single two-inch staves, or of double one-inch boards; of stone, brick or concrete; but the best and, generally, most economical method will be with staves, circular outside the barn, and either circular or oval, according to the space desired to fill, inside. Whatever the form or kind selected, they should be set upon a level, smooth, firm base sufficiently raised to avoid all danger of surface water. If built of wood, let the wood begin at the bottom; never build partly up with stone or cement, and finish with wood. They should be located as conveniently as possible, both for filling and for feeding.

For drawing the corn to the silo, a platform placed upon low wheels or hung under the axle of high wheels will be found convenient. The filling should not be hurried. Slow filling tends to light colored and mildly acid silage. Neither should there be heavy and constant tramping; simply keep the mass level and firm at the edges, with the cutter set to cut fine. With this plan of filling, the temperature will rise higher than with fast filling and hard tramping, which condition, I think, tends to the results indicated above. The use of water when filling is not to be recommended except in rare cases when the corn is very mature or severely frosted. Covering or weighting do not pay. There will be a slight loss by moulding on top; this moulding seals the top as the tight staves seal the sides. If some cheaper green material than the corn is at hand for the last six inches of filling, it will be economy to use it.

Silage stored in this way will not freeze so badly as that put in immature and quickly with heavy tramping. In feeding, if care is used to keep the edges the lowest, the tendency to freeze will be further overcome. Outside silos may freeze harder, but thaw more readily when a few warm days appear. A heavy blanket or canvass cover is a help in preventing freezing.

FEEDING SILAGE.

While silage should not constitute the whole coarse fodder ration, it may well be made to cover one-half of it. A little computation will enable any feeder to ascertain quite accurately the proportion of ears, then the amount to feed daily, can be regularly gauged. It should be fed twice daily and preferably after milking, both on account of possible danger from the odor in a close stable and the convenience in feeding. Silage forms an admirable means for lightening the grain ration when it is fed upon it. Straw and other coarse fodders, are more readily eaten by animals which are fed a liberal amount of succulent food like silage.

COST OF SILAGE.

Silage from mature corn, put up in the way I have indicated, will have a feeding value as compared with hay of not far from one to three, making one acre in corn approximate five average acres of hay; taking this into account, and admitting the necessity for the cultivating of the land and the rotation of crops, silage becomes the cheapest coarse fodder material it is possible to produce upon any farm in a corn growing latitude. Experience leads me to the conclusion that it is the cheapest in its labor cost, in its storage cost, and that it can be fed, winter or summer, cheaper than any other coarse food grown on the farm.

VERMONT HORSE BREEDING.

FRANK L. RUSSELL, SHREWSBURY, VT.
MEMBER OF BOARD.

The breeding and raising of horses is one of the most interesting and profitable branches of agricultural art if properly carried out. The revival of interest in this important industry is very gratifying. From 1850 to 1860 Vermont raised and sold more horses than any other State in the Union. Many a Morgan horse has helped to pay off the mortgages and educate the boys and girls of our state. The demand for horses was never better than today; prices are high and are likely to continue so. Horse power will not soon be displaced through automatic means. There are now many auto vehicles in use, but "the horse is still on the job".

A natural taste for the business is essential for success. A man must be a fair judge of blood lines and how to combine them for best results. No man can afford to spend his time raising mongrels. Do not mate small mares with large draft stallions. If a cross is necessary mate a draft mare to a stallion of fair size, a descendant of some one of the trotting families. If draft horses are desired, have sire and dam of that blood.

The horse that can be made to fill the greatest variety of places is the most profitable one for the Vermont farmer to raise, and we have a sufficient amount of the foundation stock. This stock springs from the blood of that stout little bay stallion, Justin Morgan that could "out-walk, out-trot, out-run and out-pull" every other horse entered against him. I think we should restore the old Morgan type. Of course, speed is no objection, but we cannot afford to breed for that alone. The trotting horse is an expensive luxury, as few have sufficient speed to win money and leave a profit.

The selection of the stallion should always be for the good there is in him. He should be masculine in every fiber, with the distinguishing beauty and strength, fire and courage of the male. The selection of the mare is no less important. It is she that is to nourish the colt before and after birth. The mare should not be coarse at any point. Her beauty should be feminine; she should carry more muscle and flesh than the stallion. She should be more rounded in outline, finer in head and limb than the stallion. Her strength should be that of fleetness, her fire that of docile playfullness, her courage that of ambition to perform. Always breed from the nature animal. No well developed colt will come from undeveloped parents. Degeneration will always result from the breeding of immature or broken down animals. The best stock is always the cheapest.

While the colt is running with its mother it is under her protection, but as soon as it's weaned it is wholly dependent on us for care and sustenance, and I believe it's the most critical time of the horse's life. Now is the time to secure the animal's confidence, and it can be gained in no other way than by kindness, and the horse or colt that is subdued by fear and brutal beating is never the same animal again, and its value in dollars and cents is lessened by this process. Many celebrated trainers have given evidence on this subject that much more can be done with a horse by kindness than with force, by a gentle caress than a cruel blow, by a lump of sugar than a heavy whip. Many men who should know better are beset by the idea that a horse can be kept under control only by brute force; as a matter of fact no man who cannot train a horse without violence is fit to manage a horse and it's a pity he should own one.

Much attention should be given to feeding and care of colts the first two winters; many try to economize by roughing them through on poor hay, straw and other coarse fodder. I consider it poor policy ever to rough them; they should be generously fed at all times on good hay and in addition to this, oats and bran, and in very cold weather, a little corn can be mixed with the oats to maintain heat.

Dried bone meal is also excellent as a small addition to the ration to bring up the percentage of digestible protein, or flax seed meal may be used with the same object, while roots such as carrots, or sweet apples, are a fine adjuster as they regulate the bowels and also act beneficially on the skin and are much relished by the colts. They should be given exercise in the yard every dry day; no matter how cold it is they should be turned out, for plenty of food and plenty of exercise are equally necessary to accomplish the best results.

The Morgan horse has done much for Vermont, yes, and for Maine, all New England, the West and the Pacific slope. There is no part of this land where the good horse is appreciated, where the influence of the blood of Justin Morgan is not seen and felt. The state of Maine became famous through its Winthrop

Morrills, its Knoxes and its Brown Harrys, and the dominating blood in these great families originated in Justin Morgan.

The government is now recognizing the value of Morgan blood and is establishing a breed to perpetuate an interest in the breeding. While there may be an improvement in any line, there has never yet been and never will be a counterfeit of greater value than the original coin.

THE EASTERN FARM.

W. F. McSPARREN, FURNISS, PA.

To the student of agricultural conditions, eastern agriculture presents two extreme personal propositions. We have two extreme classes among our farmers, extreme in the sense that one is negative and the other positive. One is an optimist, the other a pessimist. The one thinks the possibilities of eastern agriculture, fortified by intelligence, are unlimited. The other thinks we have no place for theories, that we have reached the limit of possible profitable production on our farms. The one thinks we can improve our rural conditions by an intelligent reaching out toward that line of educational work the schools have classified as "the humanities"; that the progressive farmer should maintain an open and receptive mind for the illuminations of the teachings of the schools, and the findings of investigators and experimentors in matters related to the soil, the products thereof and in all the phases of the varied lines of live stock husbandry. The other class quote Soloman and say, in agriculture there is nothing new under the sun; that agricultural practices are fixed and established; that new ideas are innovations and delusions and cannot be worked out practically on the farm and under normal farm conditions. The one class has the fault of over-sanguineness and often fails by reason of theoretical indigestion. The other class is standing still in a world where everything else is moving; has become stunted because it has shut out all expanding and growth giving elements, and grown sour because it is afraid of the light.

It appears to me that between these two classes is the safe and progressive road. The farmer needs all the hopefulness he can command, needs enthusiasm, but he needs it tempered with good judgment. He needs learning and knowledge and needs also the discretion that will only use these after they are "well seasoned".

The farmer who is conservative in his adoption of new notions and practices in the conduct of his business will have fewer disappointments and losses than the enthusiast who accepts all that is spoken and written as true and applicable to all conditions and circumstances.

The old farming practices prevailing in a particular neighborhood will generally be found fundamentally correct, as applied to local conditions, and sudden changes of a radical nature are likely to be ill-advised. But assuredly along with the progress made and being made in all other lines of human endeavor, there have been things learned, worked out, proven in general farming, in special farming, in horticulture, in dairying, in animal husbandry, that the farmer, however closely and loyally he may cling to old, traditional practices, is circumscribing his own achievements when he fails to post himself upon and make use of.

That there is an important intellectual side to the questions of the farm, no thoughtful person will now gainsay. That many farm truths have been reduced to a scientific classification is beyond dispute. That there are many things that can be taught and learned and put into practice of the farm and on the farm is equally true, and in this connection, I cannot refrain from here calling attention to the obvious wisdom of our insisting that these teachable things regarding scientific agriculture shall find places in our rural schools, so that the basic truths of agricultural science shall become incorporated in the primary and even more advanced education of our country children. I cannot say that I would advocate a strictly technical agricultural line of public school instruction, but I at least, would have our rural children well grounded in a general understanding of the principles of the affairs of the farm; and for more advanced teaching I would advocate delving as far as possible into agricultural science, not so much with a view of making farmers and farmers' wives, but as a means to widened cultural development.

By thus teaching these things to our young, we would in time, I hope, be able to bring into more harmonious relations, the two extreme classes to which I have referred. By a careful teaching of only the things that have been proven as good, as true, we would modify the extreme enthusiasm of the theorist, so that on common ground he could meet the sub-conservative, who by education, had been brought to realize that his business of farming has a science, a literature, a hope, a possibility.

Time passes and boys grow into men while we may be formulating our plans for our schools into working shape; and as time passes we can do the educational work we find coming to our hands at the institutes, at the various annual agricultural meetings, at our fairs, in our granges and in the homes. The optimist can touch his theories with the test of common sense and rational practice, and not until he has proven a thing true press it upon the notice of the one waiting to be "shown".

To my mind—putting the same test of common sense to the thought—the one thing most needful on our eastern farms today is this more intensive, more comprehensive, cultural development. We want to say to our fields, our orchards, our herds and flocks: What need ye? And to the answers they shall make unto us give a trained ear and an understanding mind.

The increase of eastern population and the multiplication of rural necessities of living make it incumbent upon us who fill the garners of the feed of the nations, that we give a thought unto the matter of making two grass blades grow where now we have the one, and it is my deliberate opinion that we have moved about as far in that direction as we can go without we enlist in the work, more minds trained especially to the work, so that the cunning hands may work more skillfully and more to our purpose.

Grosser commodities can be carried far, but good living must have the source of supply near to the market. In this fact lies the value of the eastern farm in comparison to any other farm in America—the best markets in the world are waiting for the largess of our land. I make no special plea for the deserted farms we have come to call abandoned. I have seen a few such and nowhere around them have I seen any encouraging sign, why they should not have been deserted. No man is justified in chaining his life to an impossibility. But for the farms that are not deserted, where father, mother and children are holding on because it is about impossible to let go, where the work is always up-hill and the living always down-hill—God help them!—for these I would ask that we withhold not from them—certainly not from the children, the better, new light, the educational enlightenment, that shall swing their living on to an up-grade and their work to at least a level with their strength.

The doubled grass blades for our eastern farms is not a dream impossible of realization. As I have said, our economic conditions are making them a necessity. The two cows that are doing the work of one; the two hogs that are eating the feed of one; the profitable animals that are not kept; the manure that is not saved; the crops that are not grown; the labor poorly done or badly directed, are all feeding at the root of the second grass blades, and need we wonder, therefore, why the blade grows so slowly or grows not at all?

Farmers are generally earnest workers and most earnest workers do the best they know, so, manifestly, if we shall bring our eastern farms up to the needs of the east, we must educate our earnest workers on the farms up to the plane of the demands of the business in which they are engaged.

THE CULTIVATION OF THE STRAWBERRY.

BY WILFRID WHEELER, CONCORD, MASS.

While dairying in its various branches seems to be the main reliance of the Vermont farmers, the fact should not be lots sight of that there are other ways of making the farm pay; for while dairying keeps the farmer at home 365 days in the year, fruit growing will at least give him a holiday during the winter as well as a good income.

Of all the varieties of fruit grown there is none that will bring a quicker return for the time and money expended than will the strawberry. You have a large summer population in your state; you have a good many flourishing towns and cities, and you are also within reach of large markets to the south of you, which markets can use your fruit after their own native berries are gone. The question of a market should not be a very serious one and should not deter farmers from going into this occupation.

The cultivation of the strawberry for commercial purposes might be classed under seven leading heads:

First.—Soil and situation.
Second.—Preparation of soil.
Third.—Selection of varieties and planting.
Fourth.—Summer cultivation (the first year).
Fifth.—Winter protection.
Sixth.—Spring care and cultivation (the second year).
Seventh.—Picking the crops.

And I place soil and location far above any other consideration. In the first place choose a situation free from heavy winds (which will blow the mulch and snow off in winter) and one where water will not stand upon the plants, yet where there is a good amount of moisture, for the strawberry loves a moist soil when other conditions are right. A light sandy land will grow fine plants, but will dry out during the fruitings season and you will have small, poor berries to repay a year's cultivation. There are, of course, various ways of improving land that lacks the elements that are essential to growing good strawberries, but this is an expensive operation, and should not be undertaken unless you have no other alternative. If the ground you choose slopes gently, so much the better for your strawberry beds; there will then be no danger of water covering your plants in the winter, but, in planting, run your rows across the slope. This will prevent the soil washing.

Now comes a very important part of successful strawberry culture and that is the thorough preparation of the soil. Soil well prepared is half the fight, for it means less work on your beds later on and also insures a more satisfactory result in the crop produced. Whenever it is possible, choose soil that has not grown strawberries before, or, better still, break up sod land and plant it with corn or some other crop that will keep the ground well cultivated for at least one year. If corn is used, plan to have it early so that the fodder can be ploughed in or fed to cattle by, at latest, the fifteenth of August, when a crop of buckwheat or cow peas can be planted. This crop should be turned under before the frost comes and the ground sowed again to rye or winter wheat for a cover crop. In the spring, or late winter, manure the soil with at least twenty cords of manure to the acre. It is well at this time to apply the manure when the ground is frozen. If you have not sod land to use, select a piece of ground that has been planted with one crop for at least one year. Put on a good dressing of manure in the fall and plough it in at least six inches deep. Rye should then be sown on this, and I want to impress upon you that by this winter protection of the land you save more soil fertility than by much ploughing and harrowing. This cover crop acts on the soil as a blanket over a cold man in winter. It keeps the life-giving properties in, and further protects the land from the freezing and thawing of an open winter. You will doubtless say that this freezing and thawing are good for soil; that it breaks up many of the small undissolved chemical elements. This is true, but land that is under cultivation and in a condition of present fertility does not need this, as land that is being prepared by nature for future use. In the spring, after the rye has started growing and just when you are ready to set the strawberry plants, plough the rye under; by so doing you will enrich the ground with a green crop and turn the manure, which has been well incorporated into the soil during the winter, up to the top of the ground just where the roots of the plants can use it. The land should then be harrowed at least twice and made as fine as possible. It is well at this time to harrow in a dressing of lime, at least one ton to the acre, but do not apply fertilizers now, for better results are obtained by using the fertilizer when the plants are growing during the summer. It is impossible for the roots of a newly set plant to take up an adequate amount of nourishment from a highly fertilized soil, but this same plant will stand lots of feeding later on. In applying fertilizers to a growing plant be sure that the fertilizer does not come in contact with the foliage—apply just before a rain or go over the bed with a broom and sweep the foliage clean.

A dressing of 1000 lbs. of wood ashes and 500 lbs. of bone meal should be applied about three weeks after planting this, to be followed about two weeks later with 500 lbs. of tankage or dried blood per acre.

It is best to have your plants all ready to set as soon as the field is smoothed off; the plants must be carefully trimmed and the roots shortened at least ½ the original length,—this is a very important matter for the plant has to make many new roots and when the old ones are cut new ones come more rapidly, but be sure that the leaves are equally trimmed, for these shortened roots cannot support a large top of leaves. Mark out the rows four feet apart and set the plants 18 inches apart in the row; if the ground is soft the plants can be set with the hand, but where there are stones, a trowel is best. Never set the plants deeper than they grow at first and, on the other hand, do not set them with part of the roots out of the ground.

Within a week after planting, the ground should be gone over with a weeder or some instrument that will keep the top of the ground well loosened up, for upon this depends the best growth of the plants; summer cultivation should be kept up with the cultivator, a fine tooth one is preferable and the teeth should not be too long; all weeds must be removed as soon as they appear, for weeds killed as soon as they start save much work later on. New land, where there has been no cultivated crop before, is more easily kept free from weeds.

In selecting varieties bear in mind what your market is to be; if you are going to ship berries to distant markets, firm varieties must be planted, while for the home or nearby market, some of the better quality and softer berries can be used; you cannot ship large, fine berries a great distance and expect them to arrive in good condition, while many of the smaller varieties will carry long distances and arrive in salable condition. Many of our more productive varieties lack quality, yet there are some of the productive ones that have quality to a fair degree, for instance, Sample is of good quality, productive and attractive, and it needs the perfect variety to go with it and none is better than Abington, an equally large berry of better quality and more productive, with a perfect blossom. If I could plant only two kinds of strawberries, these would be my choice for heavy soil. Minute Man, planted with Parson's Beauty, makes a very good combination and produces a large crop of fine fruit. Glen Mary and Brandywine are also very good for low, heavy soil; while Haverland, Senator Dunlap and Excelsior do best on a lighter soil. My choice of ten varieties for market culture would be: Sample, Abington, Minute Man, Parson's Beauty, Glen Mary, Haverland, Climax, Senator Dunlap, Cardinal and New Home. If I were reduced to a choice of five, I would select the first five mentioned.

Always keep in mind that you want fruit and not plants, so go over your bed often and remove all the surplus runners, allowing no more than six to root about the parent plant. Give at least six inches of space between each plant to leave room for development; even then the growth will cover the ground, all but the two feet left for a walk between the rows. One great mistake is made by strawberry growers in leaving too many plants in a bed, for you cannot have large, fine fruit from small plants, so thin out the plants and feed and care for the ones you leave as you do your best cattle.

In July and August you should apply some form of fertilizer, remembering that you want big, stocky crowns and these can only be produced by liberal amounts of potash and nitrogen applied in the form of wood ashes, muriate of potash and tankage or guano. Buyers are always more ready to pay a fancy price for fruit which is large, of good form and well colored, and while you have much of the elements of the coloring matter in your soil up here, yet you must add to these by chemical fertilizers and plenty of cultivation.

Try to get all the weeds out of your strawberry bed before frosty nights come. It is not well to cultivate later than this, for the plants want a few weeks to harden their foliage and get ready for winter, and cultivation tends to keep them growing and soft. Don't mulch your plants for winter protection until the ground is slightly frozen, for you must remember that you want to keep the frost in the ground and not out of it, for the constant freezing and thawing injures more plants than the steady, cold weather, so cover lightly and don't smother the plants by too good care.

Where the snow is sure to stay the plants should not be covered as heavily as if there were no snow, in fact, if you could be sure that the snow was going to stay all winter, very little covering would be necessary. It is well to keep in mind that this covering is very often more necessary to the plants in the early spring than at any other time, for, after the snow goes away, we are apt to have many freezing nights when the ground will freeze to a depth of an inch or more and the plants that are not protected will be pulled up with the heaving of the ground.

If there is any danger of water settling on the plants dig a few holes in the ground and fill them with leaves so that the surface water can drain away. For a mulch, meadow hay or straw is better than leaves, although leaves can be used when no other material is at hand, but they are generally too close and will smother the plants if not removed early in the spring.

In the spring, as soon as the weather is at all settled, go over the beds and loosen up the mulch and remove a part of it, but it is not best to remove it all as the plants will not stand a too sudden change, yet they must be allowed to make an early start; and this will be better accomplished if only a part of the mulch is removed at first.

Generally speaking, it is safe to remove all the mulch at the end of April or the first of May, and it is well to do this just before a rain, as the leaves will be washed clean and the appearance of the plants will be much improved.

At this time it will be well to apply a dressing of wood ashes at the rate of 1000 lbs. to the acre, and a little later, if the plants are deficient in foliage, a little nitrate of soda or guano at the rate of 200 lbs. of soda or 400 lbs. of guano to the acre will grow sufficient foliage.

Keep the cultivator going through the walks and remove all weeds. Cultivation should cease as soon as the fruit forms and a mulch of leaves or coarse hay put about the plants to keep the fruit clean and also to retain the ground moisture. This mulch will improve the fruit fully 50 per cent., for during heavy rains the mud will not be spattered on the fruit and during dry weather the soil will not dry out as quickly.

The question of pickers, especially for country districts, is often a perplexing one and often explains, in a large measure, the reason why in these places so few strawberries are grown; so plan to make whatever ground you do plant produce large crops of fine fruit and in this way reduce the amount of hand labor at the picking season. If you are near a small city or a large town the question of pickers may not be a troublesome one and your acreage can be increased accordingly, but every one must be the judge of his own conditions.

Probably no fruit is as perishable as the strawberry, and it will be necessary to go over the beds every day, removing all ripe berries, and be sure to have the pickers break the fruit from the plant with a stem,—so often a whole year's work is lost by the careless handling of the crop and especially in the picking of it; good berries, badly picked, will not bring as much as poor berries well picked. Use only new quart boxes, which can be obtained as cheaply as the old ones, and make two grades of fruit as you pick,—strawberries should never be sorted after they have once been placed in the boxes; there is always a demand for both grades and the better grade will repay you for the little extra work that you may go to.

Keep the fruit out of the sun as soon as it is picked and remove to a cool place where the boxes can be packed in the shipping boxes. If you are supplying a local market, it is not well to pack the boxes into crates, as more or less fruit is crushed in this way; open boxes, holding from twelve to twenty boxes, are very convenient and the fruit can be placed on the market in a more attractive way than in the crates. Always pick as early in the day as possible, before the dew is off the plants is best, for the fruit is cool and firm at this time and will stand shipping much better than that which is picked in the heat of the day.

After the fruit is all picked, if you intend to carry the bed over another season, take out all the mulch weed thoroughly, and treat the plants as directed for the first summer, adding, besides commercial fertilizers, a dressing of well rotted stable manure. Spraying the plant with Bordeaux will greatly increase the vigor and health of the bed and will prevent all leaf blight and rust.

The strawberry has less insect enemies than any other fruit plant, but one which causes a great deal of damage is the white grub. This pest attacks the roots of the growing plant and the first intimation you will have of its presence is a wilted plant lying on the ground; by removing some of the soil near the plant you will generally find the cause of this trouble. In getting rid of this pest, an ounce of prevention is worth a pound of cure, so don't plant strawberries on ground where potatoes or other root crops grew the previous year, for the eggs of the grub have been laid in this soil and the young grubs are only waiting to feed on the roots of some plant and they are particularly fond of the strawberry. A good dressing of lime will assist in getting rid of this pest and it is well when ploughing the land to let some hens follow the plough, for they will pick up a quantity of the grubs.

I would not advise you to water your strawberry bed during the first year, as this tends to grow rank, soft plants, which are apt to winter kill, but where it is possible, water the beds during the fruiting season, if the weather is dry. This will repay you well.

I hope that enough has been said of an encouraging nature to induce some of you to grow strawberries, so that the crop of berries for use in your own state will be materially increased. I understand that at present you import largely from Massachusetts, so it seems as if strawberry culture had a future before it in Vermont and that with judicious care and management your own market might be filled with home grown berries, and that there would yet be enough and to spare for other states of that fruit which is esteemed and cherished by all mankind.

FRUIT GROWING IN VERMONT.

BY G. H. TERRILL.

Of all the places in the United States to grow fruit there is no place that nature has endowed more liberally than Vermont; like the butter that is produced from her sweet grasses and pure water; the horses and cattle from her northern climate and rugged hillsides and the noted Merino sheep; so our apples are superior to those produced in any other state, and the markets are calling for them and paying more for them than any other, save one, and that the famous Hood River apple. This same Hood River apple is far inferior to ours in flavor and keeping qualities, but it excells in appearance, because there is an organized association behind it, and they are packed by experts and put up to please the eye and not the palate.

There is something about our soil or atmosphere, or both, that imparts a most excellent flavor to our apples. The higher up on our hillsides, the better the keeping qualities. I believe there is nothing we can plant these high hills to that will produce better returns than good red apples. There is hardly a farm in Vermont that could not produce their own apples, if nothing more, and I believe it is the duty of every farmer to provide the luxury for his family. On about every farm you will see apple trees that have been set out by some previous owner or that have come up by the roadside, or out of the way places, though they show signs of neglect, still they live and are a constant proof that this most common and desirable fruit will grow. Like everything else, they need care, and feed, to do their best, but if the right location is chosen, which should be high up on a hillside, protected from winds, if possible, yet up where they can have good air drainage or where the air is changing, free, and they will thrive. Select varieties that are adapted to your locality, some of which will grow in any town in Vermont, viz: the McIntosh, Wealthy, Fameuse, Wolfe River, Bethel, Artic, Tolman Sweet, Russet, etc. Always select a red apple for a market apple, for that is what the market calls for. If you have old trees you can graft them to good varieties, so in a few years have good apples; if not, you can buy your trees, but don't buy of these traveling salesmen, who charge you big prices and sell you trees untrue to name, and many times, inferior trees. Send direct to the growers and buy them at a much less price and true to name. I paid 40 cents each for my first trees and they were very unsatisfactory. I afterwards sent to a firm in Geneva and bought better trees for 9¾ cents delivered. If Vermont farmers would plant orchards and give them the care and thought they do their dairys and form an association that could stamp every box and barrel of apples, and the consumer would find them honestly packed and well grown, it would enhance the value of our land as nothing else can do, for where this is done in favorable localities, land sells for $200, or even $1000 per acre.

We have frosts to contend with, but we do not have the San Jose scale or any of the root diseases that trouble in some of the Western states. We are near the best markets and we have a climate that will keep fruit better than cold storage, and many other advantages, but few are setting new orchards. My advice to young men, especially, is to set out trees on your farms and as the boys come back to us who have sought cheaper lands in the West, as they surely will, you will be ready to reap the harvest of your toil and you will find, as I have before said, it will enhance the price of your farm, to sell, just in proportion to what it will to live on.

Then there is another line of fruit that you can all raise, and that is small fruits. Strawberries are easily grown and should be produced by everyone who owns a rod of land. We have grown them for twenty years, and with one or two exceptions, when frosts killed them, we have had an abundance for our own use for from three to five weeks in summer. Set the plants in early spring or summer on any good corn ground and keep them hoed and free from weeds the first year and then cover up with swale hay, straw or coarse manure and you will be surprised to see what a comfort they are in the home the next summer. We have sold $500 worth from an acre and then plow and sow to millet and get a good crop. Is this not profitable? Get your plants as near your own locality as possible and select varieties that are self-fertile, or plant in alternate rows with pollen-bearing varieties, three to four and one-half feet apart in row and eighteen inches to two feet in hill. Try a few plants in your garden and a few Golden Queen and Cuthbert raspberries, some currants and gooseberries, and have some of the good things that God has provided for the farmer who tills the soil and who is in touch with nature and should, of all men, have these things in their best condition possible,—if any are left, let the millionaire and city people have what is left. Why should we go to the city for these things or back in the pasture or woods? Just raise them near the house where the women can go out and pick them for dinner or supper, yes, and breakfast, thus giving them a chance to provide a change of palatable food in the hot months of summer.

HIGHWAY IMPROVEMENT IN VERMONT.

CHAS. W. GATES, STATE HIGHWAY COMMISSIONER.

The public road is an evidence of civilization. History reveals the fact that the promoters of the arts of civilization in all ages of the world have been road builders.

The famous Roman roads built centuries ago, some of which still exist, were the first scientifically built highways and the remarkable development of that great empire would have been impossible without them.

The history of the development of later nations is also a history of improvement in the construction of public highways.

Thomas Telford and John L. Macadam revolutionized road building in Great Britain over a century ago and their plans, somewhat modified and improved, are the plans of modern road builders today.

About seventy-five years ago the importance of better roads began to be appreciated in this country and under the influence and leadership of such strong advocates as Jefferson, Calhoun, Clay, and others, Congress appropriated seven millions of dollars to build seven hundred miles of Macadam roads. The celebrated Cumberland road was, however, the only one ever completed. The financial reverses of 1837, together with the strong pressure brought to bear on Congress in favor of the development of railroads, put a stop to the construction of national highways.

From this time the building of railroads as a means of transportation, went forward rapidly, aided by the prodigal liberality of our national government in granting franchises and the title to thousands of acres of the richest farming lands of the West, so that as a nation, for over fifty years, interest has centered in the development of our railway systems, while the improvement of our wagon roads has been largely neglected.

The need of improvement has been apparent for some time and the attention of the states has been called to this need for the past dozen years as never before. This agitation for better highways is largely due to our unprecedented prosperity and development as a nation.

The development in the last sixty or seventy years of the largest system of railroads in the world has already been referred to, and this, in the last fifteen years, has been supplemented by systems of trolley lines that have taken the place of the horse-car lines in our cities and large villages and are rapidly extending out into the country, connecting cities and towns wherever the traffic seems to warrant the necessary expenditure. The phenominal growth of the automobile industry and the rapid increase of the use of the auto as a means of transportation for both pleasure and business during the past twelve years, is another evidence of our splendid growth.

No other industry has ever made such rapid progress. The first company was formed in 1896 and turned out thirteen machines, while today the industry is scattered through fourteen states and has an annual gross income of about $85,000,000.00. About 100,000 machines are now in use in the United States; 1000 of which are in Vermont, and the limit of increase in their use does not seem yet to have been reached.

I mention this marked increase in the manufacture and use of the automobile, not only as one of the evidences of our unprecedented growth and prosperity, but especially on account of the marked influence it is having on the present demand for better highways.

The automobile clubs all over the union are doing much to stimulate interest in highway improvement and are constantly calling attention to defects in our country roads that have been endured for years without any special effort to correct them.

Natural defects, such as steep grades, and the conditions caused by our climate, such as deep snows and frosts and the deep mud that follows "when the frost goes out" in the spring can be remedied only in part. The fact that our roads are free from snow and frost only a little more than half of the year makes the problem that confronts us somewhat different from that which is engaging the attention of states further south, and any plan of improvement, to be successful, must be adapted to our conditions as they exist today.

We find, in round numbers, 15,000 miles of highways in Vermont, running up and down the valleys, crossing and recrossing the streams, winding over the hills and around the mountains, running over meadows, through swamps and woodland, with grades that vary from a level to a twenty or twenty-five per cent. grade and covering almost every variety and combination of soils imaginable, from the soft and sticky loam and clay of the valleys to the yellow sand of the plain and the gravel of the hills.

Of these, gravel alone is worthy to be named as good road material, although the loam and clay make fine country roads for light travel when the conditions are just right, when just moist enough to be free from dust and dry enough to be free from mud. In fact, an earth road under these conditions is ideal, possessing as it does the elasticity that makes it easy for the horses feet and for the occupant of the carriage.

Excessive moisture, however, changes an ideal loam or clay road into a "sea of mud" at any time of year and in the spring they are often nearly or quite impassable until fairly settled and dried out.

The question, then, resolves itself into how to control the moisture in the road-bed and how to surface it so as to get the best results.

Side ditches to carry off the surplus water quickly will answer the purpose in soils where surface drainage only is necessary, but in all soils that absorb moisture and retain it and in soils where there is a sub strata of clay or hard-pan impervious to water, under drainage is necessary. This is especially necessary to prevent damage to the road-bed by freezing.

It is a well known fact that the freezing of a dry road-bed does it no harm, but the freezing of a road-bed saturated with water will cause it to break up badly in the spring when the frost goes out. The remedy is to *dry it out with an underdrain.* Many soils, even when well drained, make a poor surface for a good road and so it is necessary to resurface with stone or gravel in order to get satisfactory results.

But underdraining and resurfacing a poor road soil with gravel or stone is expensive work and cannot be done to any great extent with the ordinary highway tax as raised by the towns in this and other states. To meet this difficulty the idea of state aid has been thought out and adopted in some form or other by nearly half the states in the union.

The plan upon which this aid is distributed in the different states varies materially.

Some of the wealthier states are appropriating large sums of money and some are bonding for the purpose of constructing long thoroughfares of expensive Macadam roads, requiring the counties and towns through which the roads pass to contribute some portion of the expense of construction and maintenance.

Considering the fact that Vermont can never be a very wealthy state with large, wealthy cities and that the burden of taxation to build and maintain our highways falls heavily upon the rural communities, and also the fact that the demand from the people of Vermont is not for a few thoroughfares of expensive highways, which can be of real service not over eight months in each year, but rather for a *reasonable improvement* of the *principal highways in each town;* it has seemed wise to adopt a plan of highway improvement that would seem to be adapted to our needs and resources, elastic enough to be applied in a rational way to the varied conditions and needs found in the different towns in the State, and making use of the materials found in each town and applying them without the use of expensive machinery,—a plan which bids fair to result in more real benefit to all the tax payers of the State than any large or more expensive plan of road building. The law of 1894 raises the tax of 5 per cent. on the grand list which is paid into the State treasury and is reapportioned to the towns on the basis of road mileage. The legislature of 1906 appropriated $50,000 to be available in sums of not less than $100 or more than $300 each year to towns that will vote for an equal sum to be expended with it.

Towns taking advantage of this act can thus have from $200 to $600 annually to add to their apportionment of the 5 per cent. tax, which makes the total available fund in many towns $1,000.00 or more which is expended by the town commissioner under rules and regulations given out by the State highway office and under its supervision. A corps of supervisors, one for each county, makes it possible to supervise the work in every town.

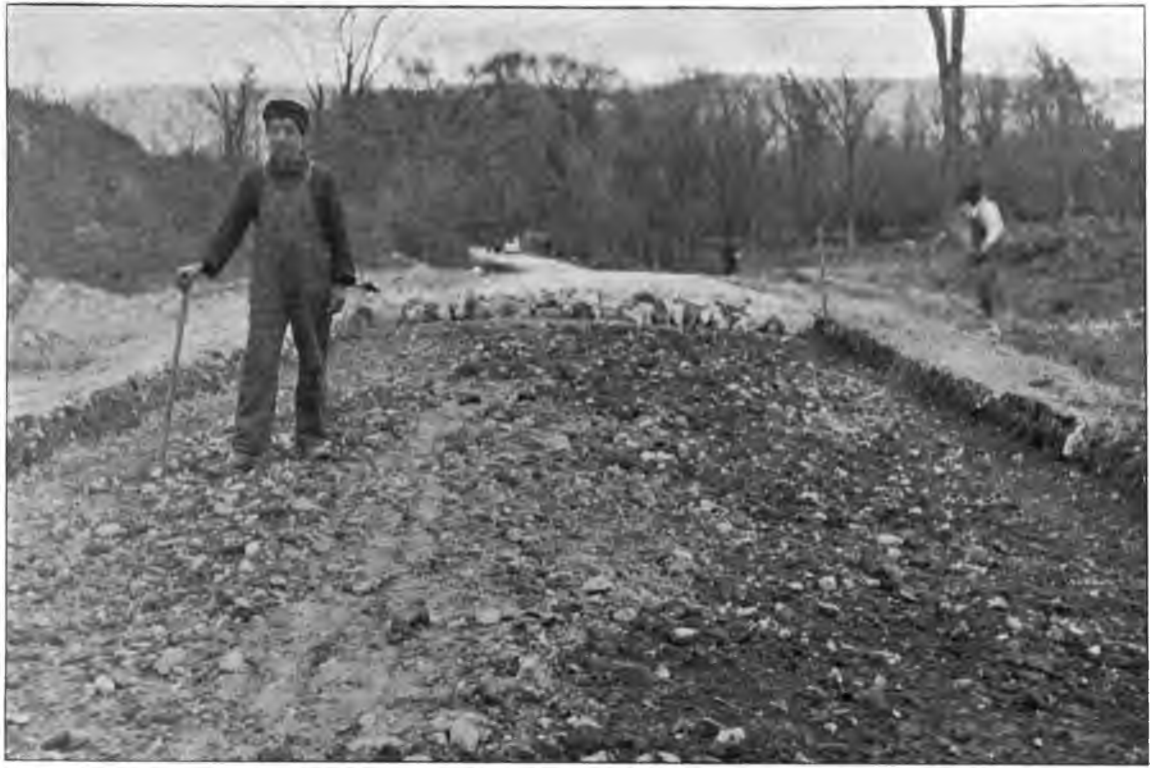
Nearly 100 miles were thus improved last year on the principal highways of this State.

Let me describe a few pieces of work which will give a general idea of the work being done in Vermont under our State aid laws:—

One of the best pieces of stone road in the State was built in Bennington near the estate of James C. Colgate, who contributed very largely to its construction and whose foreman had charge of the work. The sub-grade was thoroughly underdrained and a lower layer of field stone was placed on a well formed surface covered with ledge stone, broken fine with hand hammers and rolled down with a steam roller borrowed from the village of Bennington. It was then surfaced with a thin coat of good gravel and rolled down smooth and hard.

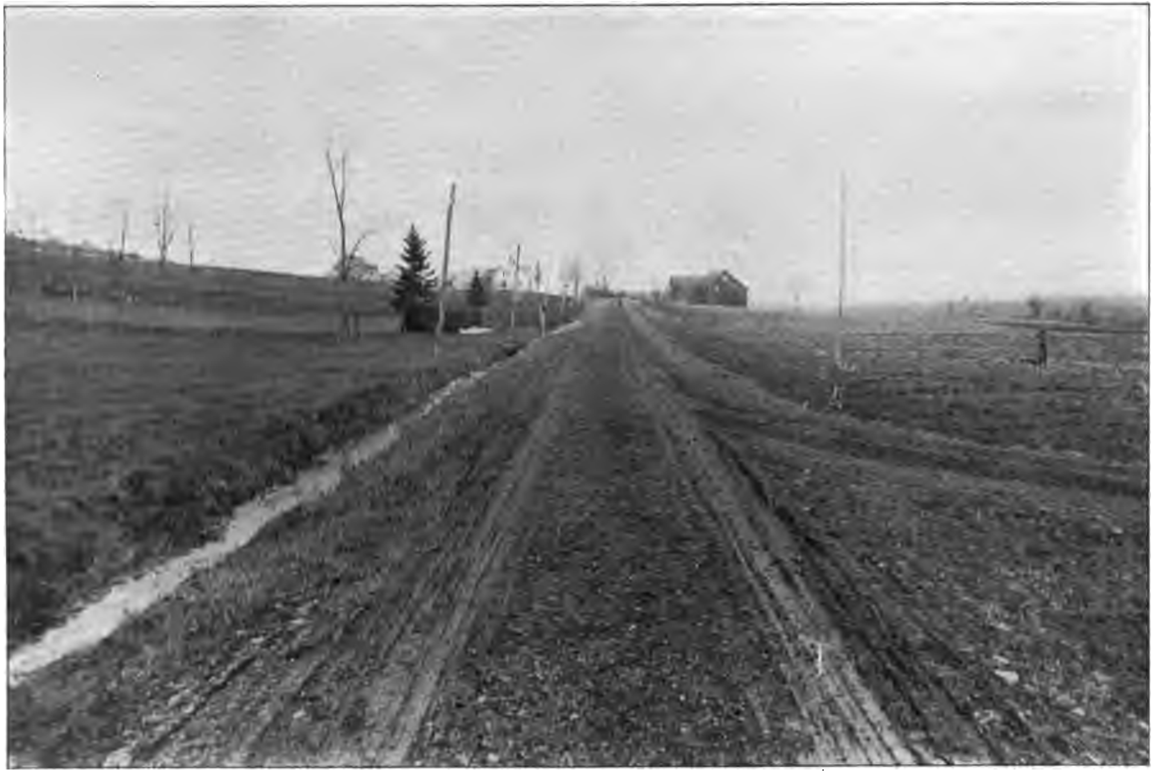
Similar roads have been built in St. Albans, South Burlington and near large villages, costing from $3000 to $5000 per mile.

The gravel Telford road is a very serviceable road and is built in many towns where conditions call for it. One of the first roads constructed on this plan under the law was built in Franklin in 1894 and is in fine shape today, although subjected

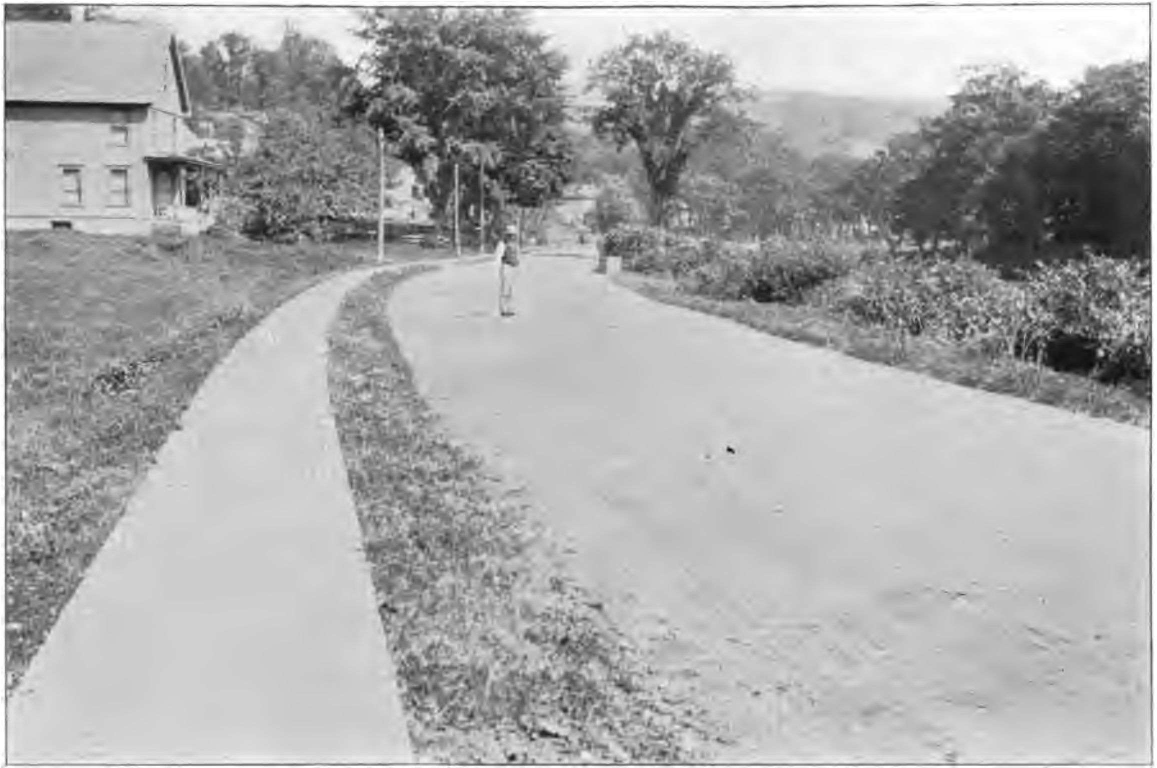


Bennington Road, Showing Foundation.

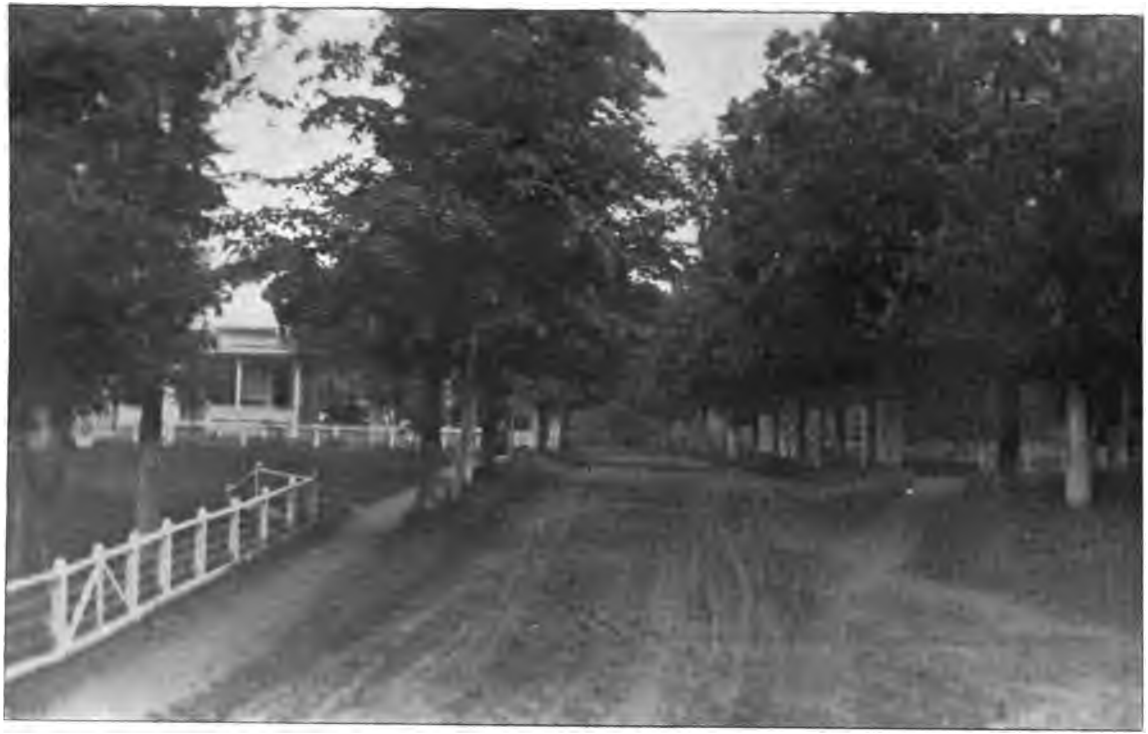
Bennington Road, Showing Stone Broken and Roller in Operation.



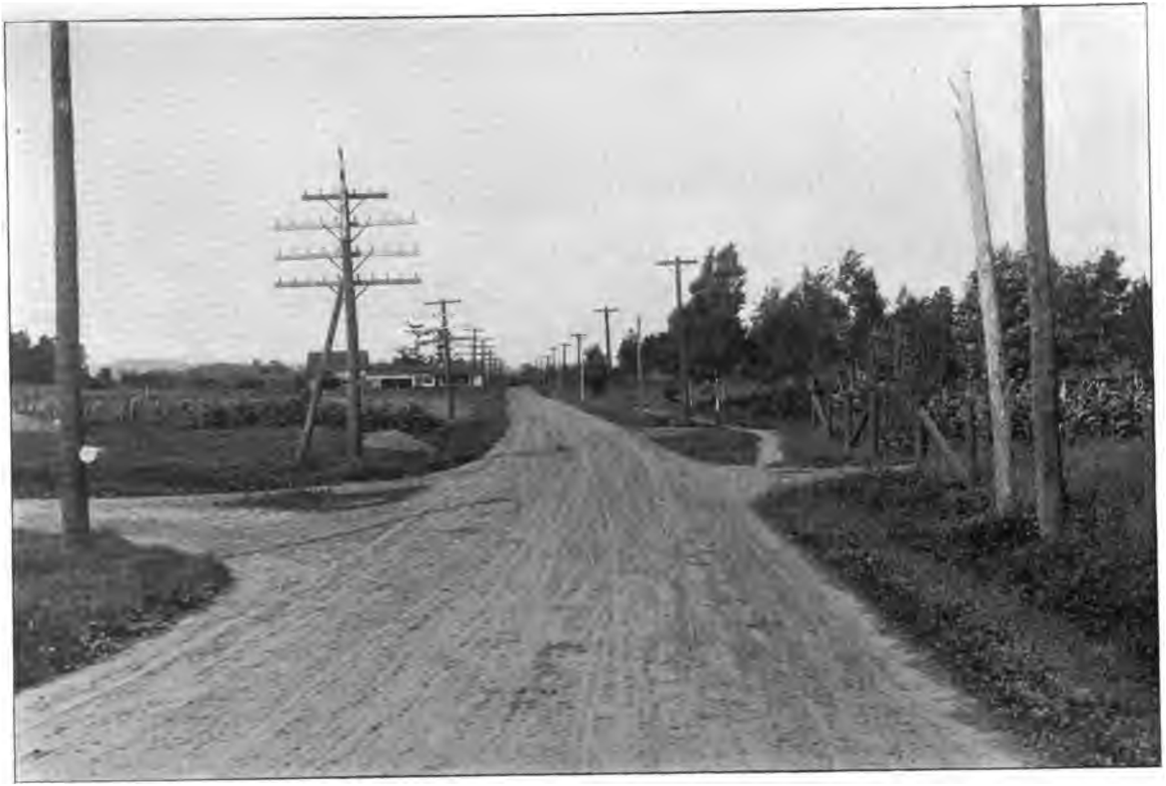
Gravel Telford Road in Franklin After 14 Years' Use.



A Finished Stone Chip Road in Montpelier.



Gravel Road in Fairlee.



Gravel Road in Hartford.

to very severe usage. It was built entirely of field stone taken from the fields and stone walls beside the road. The larger ones placed by hand in the bottom (the regular Telford construction) carefully chinked and softer stone broken finely on the surface. This was surfaced with about four inches of good gravel. The entire work was done by hand with ordinary tools; no modern machinery being used. Roads of this kind are costing $2000 to $3500 per mile.

At Montpelier and other towns near quarries where the waste stone chips can be utilized similar roads are built with the larger chips in the lower courses and the upper course broken fine by hand hammers and rolled down and surfaced with a light coat of gravel.

The V-shaped stone road, and the underdrained foundation with gravel surface are also used in soft yielding soils that absorb water, but on loose, sandy, or naturally well drained soils, the *gravel road* is much more commonly built. A gravel road in Fairlee built several years ago with 8 to 10 inches of good gravel, well covered and packed by the ordinary travel, is an illustration of a very satisfactory road that can be built cheaply and for light travel is equal if not superior to any other type.

Hartford has made marked progress in improving her highways with gravel. The foundation soil seems to be adapted to that type of road and the almost unlimited supply of bank gravel of excellent quality makes the problem a comparatively easy one in such towns. Mr. T. W. Hunt, the commissioner, shapes up the road bed with the road machine, applies about ten inches of selected gravel and keeps it planed down smooth until it is thoroughly compacted by the regular travel.

Hartford bought a steam roller last season and the gravel road built with it seems almost perfection.

There are more miles of improved gravel roads in the State than of all other types, and their cost varies from $500 to $2000 per mile. Special conditions call for special treatment and to illustrate one of those cases I would refer to a swamp road in Cabot, where a crust of hard pan had been carted on to a bed of muck and which frequently broke through and caused no end of trouble. This was corduroyed with cedar poles, 3 to 6 inches in diameter, covered with the finer brush, carefully placed over the top and surfaced with one foot of hard pan and gravel. The ditches were carefully opened and the material used for the shoulders of the road. This has proved to be a very satisfactory road, although very cheaply built of materials close at hand.

There has been steady improvement in the quality of work done with state money and already the benefits of the law have been fully demonstrated.

Hundreds of the very worst pieces of road in the State ten years ago are today the best roads we have.

A continuation of this plan for a few years more will result in raising the general character of our main highways in every part of the State to a marked degree. But the benefit derived from this plan is not confined entirely to work done with State money.

The annual county meetings of town road commissioners and selectmen are having a marked educational influence on the expenditure of the town money in each town. Commissioners are "learning the trade" and a more judicious and economical expenditure of town road funds is bound to be the result of these yearly discussions. The importance of this feature is apparent when we consider that no matter how much state money we may spend each year in building improved highways, there will still remain a very large percentage of common earth roads which we must use as long as we live.

If, under this law we succeed in getting the towns to put their earth roads in good condition *early* each *spring*, not any time during the summer, and to keep them so through the season, so that the traveling public can get the benefit of the money expended, we shall have accomplished much in addition to the work actually done with the State money.

This problem of highway improvement in Vermont is a most important one and upon its correct solution depends more than some of us are aware,—the future prosperity and development of our State.

I am more fully convinced each year that we have made no mistake in assuming, to a certain degree, the supervision of the care of the main highways in all the towns in the State. This provision of the law is a wholesome one, for whatever plan of State aid may be adopted, it stands to reason that the State and the towns must work hand in hand with the idea the roads in any particular town are of interest not alone to that town but to the whole traveling public and that the State is directly interested in them and, in a certain sense, responsible for them.

AGRICULTURAL TEACHING IN THE PUBLIC SCHOOLS.

JOSEPH L. HILLS, DEAN DEPT. AGR., UNIVERSITY OF VERMONT

An address delivered at the graduation exercises of the Bristol High School, June 12, 1908.

The choice of subject with which the speaker is to lull you to sleep for the next half hour was determined by two facts; first—that some representative of the Agricultural Department of the University was sought by your principal, to address you on this occasion, naturally in order that a topic with a farm flavor might be presented; and, second and more important,—because of the very unusual movement toward and public interest in the establishment of agricultural education in the grades and secondary schools; a movement and an interest fraught with promise of good things greater than we can now presage. And so, if you please, let us consider the present status and the potentialities of this proposition, with special reference to its application to Vermont conditions.

Agriculture is the one industry which sustains life. Let the farmer strike and in six months mankind is brought to its knees and faces starvation. It is, moreover, the one, perhaps the only one, which conserves the permanent prosperity of the commonwealth. No other great industry thrives save by the destructive use of natural forces or agents. Manufactures and transportation modify the form of, or change the location of commodities, but also consume them, often faster than the raw materials are made. Agriculture creates. Manufactures alter. Transportation moves. Agriculture burns no coal, fells no forests, exhausts no ore beds. This great creative agent of conservation, however, devastates when misdirected. Man's use of the soil has been largely destructive, yet it may be constructive. Ignorance has made a desert of Palestine which was once a garden. Intelligence has made a garden of many parts of the West which once were desert. The great English chemist, Crookes, predicts racial suicide by starvation because of soil mishandling and lessened wheat harvests. But man's inventive genius and increasing apprehension is coping with the situation.

Agriculture may feed millions yet to come IF, only if, trained brains guide skilled hands. If, however, the Western mental attitude prevail as to the conservation of soil fertility, if wastage continues, if "*apres nous le deluge*" rather than "*noblesse oblige*" is to be the motto, then one may despair of the future and look to see the stock of available plant food in arable soils reduced to an unprofitable minimum.

But such an outcome cannot eventuate. The congress of Governors was not called at the White House for naught. The preservation of national resources is a matter of national concern. Nitrogen, phosphoric acid, potash, lime, humus, the heart of the soil, the essence of real estate, do not belong to the individual to waste, even though he is farming his own acres. National well-being demands that these talents be neither wasted nor lie unused, but such usage as will serve to lessen or prevent loss. The public propaganda is attracting attention; the press; the institute; the college; the station; the grange; a multitude of agencies are bringing home, particularly to the rising generation of farmers, the ultimate outcome of soil devastation. There is today a more thorough understanding of fundamental truths, a more successful adaption thereof to farm operations. There is far greater appreciation by the farmer of the worth of education; by the educator of the importance of the farm, the farmer, and of farming; and by both of the teachableness of agriculture. And now there is coming into realization that hope long visualized, that movement concerning which many are thinking, more interested, several writing and talking, and some doing; the introduction in a direct, forceful, helpful way of agricultural instruction into rural schools. A sort of teaching which should serve more effectually than hitherto to bring the boy into appreciative relationship with his environment; to inspire him with a love for the home farm because of his better understanding of the principles of its operation; to lighten its drudgery by telling him the story of the soil and the crop; to widen his opportunities thereon in after life by substituting knowledge of fundamental principles for the routine of empiricism. Not a new twist to education, not a temporary fad, not an added burden to an already overcrowded curriculum; but a new point of view, a re-directed effort, a substitution in some cases of vital, environmental subjects for dead wood or for frills; matter fairly well shaped into pedagogical form; matter having cultural as well as agricultural values in teaching; a movement pregnant with great promise of economic and educational advancement.

This effort to adapt school work to life work is no new notion. An agricultural reader for school use as well as for home consumption was printed in Windsor, Vt., in 1824. It contained some fifty articles relating to farming, including directions for the manufacture of sundry beverages, for the erection of lightning rods, for the catching of fruit thieves and for the discovery of the poor farmer. An agricultural school was started in Connecticut in 1826 and several others from 1826 to 1855, but their lives were short. Washington urged, Jefferson inculcated, Webster preached the doctrine. But the times were not ripe. Until Liebig's day the art was ill based or without base; its teachings of fact rather of reason, of how rather than why, informational rather than inspirational. But since Liebig its practice has become more systematic, many fundamental laws have been determined and its votaries better informed. Moreover the value of agriculture as an informational, disciplinary, and cultural study has been enhanced by the correlated effort of trained educators to reduce it to pedagogical form. Where once there was a professor of Agriculture today there exists instructors in twenty subdivisions thereof, so has the volume and the subdivision of the subject grown. Even in our necessarily incomplete work at the University, we have four teachers of this one subject. We have now something worth teaching, put into teachable form. The next step is to determine where and by whom it shall be taught.

Agriculture is being taught today the world over, to "all sorts and conditions of men." In every European country but Spain, Italy, Turkey and the small Balkan states; in Tunis, Natal, Ceylon; in the West Indies, Japan and Siberia; in the Philippines, Porto Rico, and even in Guam; to Indians in Oklahoma, to Jews in Southern New Jersey and Pennsylvania and to thousands of negroes at Tuskegee, Hampton and elsewhere; to orphans, incorrigibles, and to the feeble minded. Here in the United States, where the inception of the movement has been relatively slow, several types of schools have evolved under national, state, county, and private auspices. The national schools strictly speaking do not exist. The only national aid thus far vouchsafed has been extended to colleges; but several of these colleges, particularly the negro institutions and those in some of the educationally backward states, are hardly higher graded than are schools. Several of the state universities and agricultural colleges have secondary schools connected therewith. There are successful state schools some twenty or more in number in New York, Alabama, Georgia, Wisconsin, Michigan Missouri and California. There are private schools, sectarian or otherwise, in many localities for boys and for girls, the latter working particularly along landscape gardening lines. There are schools of all grades, primary, grammar, high school, academy schools that are straight trade schools, some that make vocational studies a main feature and are distinctively agricultural schools, and yet others where agricultural courses are offered in previously existing high schools. Time forbids the consideration of the many interesting foreign types.

These sundry sorts of secondary schools are reducable to two types, the separate school and the merged school, the outgrowth of the two distinct theories now extant as to the best means whereby the young idea may be taught to shoot at the new target. The one strikes out boldly and establishes new institutions wherein industrial training is the dominant motif. The other seeks to engraft agricultural teaching upon the existing school system or to develop it therefrom. Epigramatically, perhaps inaccurately, one may say that in the one case agriculture forms the substance, and in the other the flavor of the course.

The engrafting system necessitates the expansion of the high school teaching force and equipment the better to meet environmental needs, and such unification and consolidation of lower grades as many tend to strengthen their work; a single high school unit in a town or group of towns, highly differentiated as to courses of study, using the existent school structures with such additions as circumstances call for, and evolving the new course gradually and as needed.

The separatist system, the agricultural educational idea militant, does not compromise, seeks no alliances, but forces its way into the school system and builds from the ground up new institutions, rivals of the old, in which all teaching centers about the industrial nucleus, the sundry subjects being taught with special reference to their agricultural relationships and practical applications.

Wide diversity of opinion exists as to the preferable type. The one view has resulted in the establishment of a great variety of industrial institutions; textile schools, manual training schools, Simmons colleges of domestic science, ceramic schools, mining schools, engineering schools, agricultural schools, all of which are distinct educational entities. The other is the expansion of a school into a system of co-ordinate courses with distinct purposes, wherein many students of many minds, aims, and diverse abilities may be educated together, though differently.

Each proposition has merit; either is immensely in advance of what has been; and both are in vogue and successful. Doubtless the outcome will be differently determined in different locations. Let us review the strong and weak points of each system, taking first the more pronounced separatist type. For this it may be said that:

(1) It is positive, aggressive, stands for vocational teaching primarily.

(2) Several which have been in existence for six to twelve years have "made good."

(3) A larger percentage of the students return to farm life than intended so to do at the opening of the courses, indicating that the atmosphere is favorable to farm life.

(4) The farmers themselves show lively interest in their own schools.

(5) They tend to send students to higher schools which otherwise would not have attended them.

(6) Boys attend who would not go to a high school of the conventional type.

(7) The teachers do agricultural extension work among the farmers, get close to them, help them, give lectures, aid in stock selection, furnish bulletins, plans and blue prints for roads, silos, buildings, drainage systems, test seeds, milk and cream, spray, disinfect, graft trees, etc. They are agricultural leaders, helpers, teachers, uplifters to all the countryside.

(8) Finally, as is well stated by Dr. Bailey, they serve to break down old prejudices, to set new and independent standards of education, to arouse enthusiasm, and to develop ways and methods of teaching the common affairs of life.

Dean Davenport, brought up a separatist, but for years the head of the great college of Agriculture of the University of Illinois, a deep thinker, than whom no other in this country is more loyal to agricultural education and to the farmers, makes a powerful plea for the enriched high school course as against the segregated agricultural school. He declares emphatically and argues strongly, (I would that time permitted entering into the details of his cogent claims) that the separatist institution:

(1) Is never as good.

(2) Is apt to raise barriers, to accentuate class distinction to impede the natural flow of men from one profession to another.

(3) Is certain to require the bulk of students to live away from home, or else to serve but limited circles.

(4) Will prove a barrier as between agricultural and other interests where greater mutual understanding is desirable.

(5) Is likely to injure the development of existing high schools.

(6) Is likely to check the extension of the high schools movement in its present form into rural communities.

(7) Is unnecessary in order to have agriculture well taught.

Dean Davenport does not intimate that high schools as at present constituted are equipped in terms of teachers, apparatus, laboratories, or indeed often in buildings, adequately to handle agricultural instruction. But he believes that when ready, the education they will afford, (to use again that overworked play on words, which, however is aptly applied here) should serve to make farmers men, whereas the vocational teaching will tend rather to make men farmers.

Dr. Bailey, the head of Cornell's College of Agriculture, who holds with Davenport as to the proper philosophy of this educational movement, raises the question whether these disconnected schools are always to hold undisputed leadership. He declares it to be "a very important pedagogical principle that agricultural education should not of right be separated from all other educational efforts;"that "education by means of agriculture is but one phase of education in general;"that the danger is that in the isolation of these institutions we may isolate their educational program". He intimates the temporary vogue of the separate school and declares that the problem's final solution lies not in organization of special detached schools but in the re-directing of existing public schools in such a way that they shall teach the members of their communities how to live".

This arraignment by these two foremost American students of the philosophy of education as applied to agricultural instruction is a formidable one. Personally, the speaker cannot help according to it great weight in the determination of such judgment as he has formed. Yet the positive arguments are strong ones and it is evident whether the separate school is a transitional or a permanent phase that it appeals today to many and is bulking large in the middle West and South.

For the consolidated high school, upon the curriculum of which industrial studies are engrafted, there may be advanced the arguments of

(1) Economy of construction and running expenses.

(2) The inspiration due to contact with students and teachers in other courses.

(3) The sense of unity instead of one separateness.

(4) Often, but not always, better teachers and equipment.

But against it may be urged:

(1) The diversified aim and consequently less direct purpose.

(2) A possible lack of close touch with the farming constituency.

Both types of schools are rapidly increasing in numbers. Last year it is stated that there were two hundred high schools in Missouri, thirty in Ohio, and one or more in twenty-one other states offering courses in agriculture; that agriculture is to be taught in one hundred fifty schools to be opened in Virginia; that a large share of the one hundred ninety township high schools in Ohio teach agriculture; that the Ohio law permits its teaching in any elementary or high school; that it is required by law to be taught in rural schools of eleven states and that in ten teachers are required to be examined in agriculture; and that in twelve states regular courses are offered in normal schools. Separate schools are many as already remarked. One should in particular note: Georgia's eleven with their $800,000 fund raised by private subscription, each one as generously endowed by annual state appropriations as is our State University by its state law; Wisconsin's successful county high schools; the world famous Minnesota agricultural school with its hundreds of students and its half million dollar equipment; the new MacDonald Institute near Montreal with its $2,000,000 fund; the Mt. Hermon school in Massachusetts, its 1000 acre farm, its 3000 acre forest, its nearly one hundred agricultural students in its elective courses, and its principal agricultural teacher, a recent graduate of the agricultural department of the University of Vermont. Lest I be misunderstood let me say that type is less important than results. Wesleyan University at Middletown, Conn., a Methodist classical college, has done more for farming and for farmers, though it never has taught agriculture, than have some so-called agricultural colleges. Either type may do much where prejudice is not too rampant.

Every educational advance has had to fight its way to recognition. Within the memory of men now living, science students in college were held to be outside the pale and were not admitted to chapel exercises. For generations high school education was confined to classical studies and had little direct bearing upon useful life service in the fundamental industries. Manual training fought for its life fifteen or twenty years ago and won; and for a decade, education for city hands in preparation for life work has been recognized. Now the farmer, who constitutes a half of our population, is to be similarly trained in his calling. Than this, there is no more important, no more pressing educational problem. The National Educational Association is thoroughly committed to the movement. Civic associations, academys of science, the greatest, gravest and grayest of our universities, Harvard, Yale, Columbia,—recognize it and accord it their earnest sympathy and cordial support. Secondary education in and by agriculture is coming to its own today, because it fills a need and fills it worthily.

Now as to Vermont.—The speaker believes the time ripe for the inception of this movement here. It shows so many phases that some one or more must be applicable: it is nature study, school gardens, elementary agriculture; it is farm boy's clubs for corn judging; it is short courses for the busy, reading and correspondence courses for the shut-in and home tied; it is all things for all peoples, adjustable and adaptable in its effort to be of service. Its main phase, however, rural school and secondary school teaching in agriculture, education by agriculture as Bailey aptly puts it, is what we are particularly concerned in. But here, the primal need is neither buildings, equipment, nor indeed enthusiasm, but teachers who know what to teach and how to teach it. They are few and the visible supply does not meet the demand.

The speaker is inclined with his present information to favor the introduction of agricultural training first into the normal schools, or, better, into a normal school, making some one of them distinctively a fitting school for this class of instruction. Thus preliminary steps would be taken looking towards the introduction of agricultural education into the grades, which would later be followed by extension into high school work. Personally, the speaker doubts whether this State is ready as yet to go further than this of its own initiative. There is some likelihood, however, of National incursion into the field. There is a bill now pending in Congress, known as the Davis bill, which contemplates annual grants for the equipment and maintenance of manual training and agricultural high schools. In the language of Assistant Secretary of Agriculture Hays, "The terms of the proposed bill provide that Congress shall appropriate annually to each state ten cents per capita for secondary industrial education. Of this sum each city with more than 2,000 inhabitants shall receive its per-capita share, the only limitation being that this money shall be used for studies in mechanic arts and home economics in schools of secondary grade. To the population outside of cities of the size named the ten cents per capita shall be used for studies in agriculture and home economics in secondary agricultural schools. For both city secondary industrial schools and in the agricultural high schools thus established, the states or locality must furnish the lands, buildings, and also current funds to provide all the necessary general studies to round out strong courses of study. The only restrictive provisions are that the federal money shall be effectively used for studies relating to agriculture, the mechanic arts, and home economics. Since the money is not sufficient to be applied to the consolidated rural school and to the village school where rural pupils must attend while sleeping in their parents' homes, that part provided for those who expect to be farmers and farm home makers is directed to be used in agricultural secondary schools of rather large size. This insures that excellence of equipment and teaching force which will justify the nearly mature farm youth in expending time and money to attend.

The bill further provides that Congress shall appropriate one-fourth the sum received by each agricultural high school for a branch agricultural experiment station to be located at these institutions and requires the state to appropriate an equal sum for these stations. This branch station will aid the practical teachers to fully understand the soils, crops, and live stock, and the plan of farm management suited to the respective districts. It will provide means with which to co-operate both with the state experiment station and with the United States Department of Agriculture in breeding, testing, and distributing new varieties of field, orchard, and garden crops; in improving the breeds of animals; and in working out systems of farm organization, field management, soil fertilization, and crop production".

Vermont's rural population is a little over 200,000. The subsidy would amount to $20,000 a year for rural schools, available for teaching but not for buildings. The State or locality has obligations under the enactment to furnish buildings, land and in part to bear the expense of maintenance. The passage of this enactment in its present shape will do more to aid mechanic arts in New England than Agriculture. It is built for the South and West rather than the North-East, yet it would be of decided help in Vermont, particularly by way of getting the movement well upon its feet. If it passes at the short session, which is doubtful, it cannot take effect here until the General Assembly of 1910 acts upon it; and, personally, the speaker is inclined to hope that it will remain within the limbo of the committee room during this Congress. For it were wiser to make haste slowly and to consider all the bearings of this important matter than to rush into error.

That some such movement is likely ultimately to eventuate is quite certain; pending which time Vermont educators will do well carefully to consider the whole situation. The coming summer school of school district superintendents to be held in July, at the University, is to be devoted to the consideration of ways and means and methods of agricultural teaching in the schools, and in particular of the point of view now taken by the high priests of this educational cult. It is an earnest of the attitude of these men in whose hands lies the direction of the public school system. We of the University wish the entire movement God speed. It means more and better trained boys and girls and our Morrill Agricultural Hall; better, more thorough, and more far reaching agricultural instruction within its walls. It means better farms, better crops, better stock, improved buildings, and equipment, more profitable sales, in short an improved economic agriculture. It means better men because they are better farmers, a higher citizenship, a better State. The "greater Vermont" of which we hear much nowadays will owe no small part of its enhanced greatness in the future to the teaching in the public schools to the farmers of tomorrow, of elemental and fundamental agriculture.

NOTES FROM DR. HOLTON'S ADDRESS.

Dr. Holton, Secretary of the State Board of Health, spoke at many of the meetings during the winter of 1906 and 1907. The subjects were of interest to all and were calculated to make happier and better homes.

The necessity of sanitary conditions in and surrounding dwellings, especially on the farms, was dwelt upon. It was pointed out that the surroundings of the home should be free from decaying animal and vegetable matter; that out-buildings should be kept clean; that drainage should be away from the house and well, if there was one that furnished the water for the family; that the cellar should be dry, always kept free from decaying vegetable matter and well lighted; that kitchen, living and sleeping rooms should have plenty of sunlight and be thoroughly aired; especially should the sleeping room be well ventilated at night by keeping one or two windows open, even in the cold winter nights; and that plenty of time should be taken at the table to thoroughly masticate the well cooked food, giving the digestive organs time to properly and thoroughly assimilate each meal.

Investigations, both in this country and by the Royal Commissioners of England, extending over several years, conclusively demonstrate that tuberculosis can be communicated from the bovine to the human and *vice versa;* hence, great care should be taken to determine that all dairy herds are free from tuberculosis; otherwise the products might contain the tubercle bacilli which, taken by a person, would convey tuberculosis to some of those who consumed the products of the herd. It is important to early detect the presence of the disease in order that hygienic means be adopted to prevent its development, and effectually cure the person before it reaches the later stages. The Doctor advised that great caution be exercised by persons who know they have the disease to prevent their giving it to others, especially in the care of their sputum, which should be received in a special sputum-cup, or in a proper napkin, which should be at once deposited in a paper bag and all burned at the first opportunity; that this disease is a communicable one, but only by disseminating the germs which produce it; that if proper care is taken by the diseased person, the other members of the family are perfectly safe.

His discussion of pure, clean milk was of especial interest. It appeared that, as a result of the State Board's work in the inspection of stables and examination of milk, a great improvement in the effort to have clean milk had resulted. At first only one-third was clean, two-thirds being dirty. At the end of two years, two-thirds was clean and only one-third was dirty. Clean stables well lighted and ventilated, and clean, healthy cows are essential. Every one that has to do with the milking and care of the milk should be scrupulously clean, the milk to be cooled as quickly as possible and kept at a low temperature. Only by the observance of all these requirements can clean milk be assuredly delivered to customers. When the milk reaches the house where it is to be consumed the same care must be exercised; clean vessels to receive it must be furnished, and a clean, cool place free from dust or a bacteria-laden air. Persons having any communicable disease should never handle any dairy products, or be in the room where they are kept.

EXPENSES OF BOARD OF AGRICULTURE.

George Aitken as Secretary, from July 1, 1907 to Jan. 14, 1908.

George Aitken:		
Services	$132.00	
Expenses	39.52	
		$171.52
L. R. Jones:		
Services	$ 8.00	
Expenses	9.41	
		17.41
F. L. Davis:		
Services	$ 68.00	
Expenses	52.57	
		120.57
Arthur M. Vaughan:		
Services	$ 20.00	
Expenses	23.32	
		43.32
		$352.82
Tuttle Co. of Rutland, for 2500 copies of Vermont, 1907, received too late to be included in report of 1907	$1344.47	
Freight, express, postage, advertising, etc.	93.66	
Brown & Moore, bill for printing	14.50	
		$1452.63
		$1805.45

EXPENSES OF BOARD OF AGRICULTURE.

Fred L. Davis as Secretary, from Jan. 14, 1908 to June 1, 1908.

Fred L. Davis:		
Services	$216.00	
Expenses	147.60	$363.60
Arthur M. Vaughan:		
Services	168.00	
Expenses	110.03	278.03
Frank L. Russell:		
Services	170.00	
Expenses	139.07	309.07
Dr. H. D. Holton:		
Expenses	73.56	73.56
Charles W. Gates:		
Services	84.00	
Expenses	88.07	172.07
George H. Terrill:		
Services	76.00	
Expenses	48.54	124.54
Dr. J. L. Hills:		
Services	4.00	
Expenses	.58	4.58
Prof. L. R. Jones:		
Services	12.00	
Expenses	6.26	18.26
Hon. C. J. Bell:		
Services	8.00	
Expenses	7.87	15.87

Amos J. Eaton:		
Services	$ 16.00	
Expenses	4.50	
		$ 20.50
Wilfrid Wheeler:		
Services	24.00	
Expenses	15.42	
		39.42
B. Walker McKean:		
Services	92.00	
Expenses	66.85	
		158.85
W. F. McSparran:		
Services	52.00	
Expenses	69.20	
		121.20
		$1699.55

MISCELLANEOUS EXPENSES.

Advertising account	$272.66	
Brown & Moore, for printing	67.50	
Express, postage, 'phones, etc	83.86	
		423.52
		$2123.07

REPORT OF THE COMMISSIONER OF FORESTRY.

To His Excellency, Fletcher D. Proctor, Governor of Vermont.

The work of the Forestry Commissioner the past year has been mainly in co-operation with the Board of Agriculture, having been present at every meeting of the board and presented the problem of forestry in some of its various phases according as the needs of the community seemed to demand. Public meetings have been held with the women's clubs in Windsor and St. Johnsbury and one on Arbor Day with the public schools of Hartland. One bulletin, No. 4, containing the laws and regulations relative to forest planting has been issued and distributed.

In general, the work has been along educational lines and the best results seemed to come from presenting the question from a financial standpoint. In other words, if the Vermont farmer can be made to see where he can make a dollar he at once becomes interested. Generally speaking, the farmers are not aware of the value of their standing timber. White pine is without doubt the most valuable species for general planting, both on account of its value as lumber and its rapidity of growth. Examples of natural seeding can be found in nearly every town in the Connecticut and Champlain valleys, varying in value according to age and density up to one thousand dollars per acre. This latter figure was obtained from a piece of about ten acres in Barnet. In the same town is a forest of about fifteen acres, only forty-five years from growing a crop of oats and now covered with white pine, the largest being 18 inches in diameter. Here are 1000 trees per acre averaging 10 inches in diameter easily worth five hundred dollars per acre—all grown on land too poor to keep in cultivation forty-five years ago.

The best results from artificial planting are probably at Woodstock on the Billings estate. Here pines planted twenty-eight years ago are two feet in diameter. Norway spruce are nearly as large, only they do not hold their size like pine. One Norway spruce showing 32 years growth sawed out three hundred nine feet. This was in a plantation eight by eight feet or six hundred eighty trees per acre. These trees would yield over two hundred thousand board feet, worth at least fifteen dollars a thousand, making the acre worth over three thousand dollars. There are very few farms in Vermont, even though they be the most improved farms in the State, which do not have some waste land in the shape of gulleys, banks, etc. This land, now absolutely useless, should be planted to white pine, Norway spruce, black locust or some other quick growing, valuable lumber tree and made to yield revenue for the future. Many back farms are being bought by lumber men who realize more than enough for the lumber to pay for the farms.

Another important question is the rapidity with which trees produce lumber, or the size when it is most profitable to harvest. From measurements of average trees, using prices today, white pine trees from ten to fifteen inches in diameter are paying thirty-three per cent. interest; from fifteen to twenty inches, ten and one-half per cent; from twenty to twenty-four inches, five per cent; from twenty-four to twenty-seven inches, two and three-fourths per cent. This does not mean that a tree over twenty-four inches in diameter has stopped putting on wood, but we must realize that the average white pine twenty-four inches in diameter contains one thousand board feet and is worth at least ten dollars. Consequently it must make considerable growth to pay any profit if we take into account its value at the outset.

Questions in regard to thinning forests which are difficult to answer until the ground has been looked over are frequently asked. It would seem to the commissioner, and others interested in forests, that the time has come for such legislation as will enable the State to employ an expert forester and purchase small blocks of timber and waste land in different parts of the State which may serve to teach the farmers and land owners by actual example what can be accomplished. This will necessitate considerable expense at the outset, but such plantations soon become self-supporting. The forest reserves of the United States, which are among the youngest in the world, were a little more than self-supporting in 1907, and in some parts of Germany the net profit annually is $6.00 per acre.

Certain measures along these lines will be presented to the Legislature the coming fall by the Legislative Committee of the Vermont Forestry Association, and it is believed by the commissioner that material improvement of the forestry and agricultural interests of the State will be accomplished by their passage.

Fire reports for 1907 have been received from every town in the State. Fires have been reported in eleven towns, doing damage amounting to $2000, costing $326.55 to extinguish, and burning over three hundred twenty-seven acres.

The expenses since June 1, 1907, aside from the regular work with the Board of Agriculture and the printing, are as follows:—

Per diem	$ 80.00
Postage	39.52
Express	3.36
Travel	16.27
Hotel	12.50
Total	$151.65

ARTHUR M. VAUGHAN,
Commissioner of Forestry.

Randolph, Vt., June 29, 1908.

VERMONT FAIRS FOR 1908.

ISSUED BY THE STATE BOARD OF AGRICULTURE

Vermont State Fair.

At White River Junction. September 22-3-4-5.

President	Maxwell Evarts	Windsor
Secretary	Fred L. Davis	North Pomfret
Treasurer	Geo. E. Whitney	Burlington

Vermont Dairymens Association.

Annual Meeting second week in January, 1909.

(Place not decided.)

President	C. F. Eddy,	Stowe
Secretary	Fred L. Davis	North Pomfret
Treasurer	M. A. Adams	Derby

Vermont State Poultry Association.

At St. Albans, Jan. 19-20-21-22, 1909.

President	S. H. Wood	St. Albans
Secretary	Frank W. Sault	Swanton
Treasurer	G. L. Curtis	St. Albans

Vermont Maple Sugar Makers Association.

Probably at Montpelier, Jan., 1909.

President	A. J. Craft	Enosburg Falls
Secretary	H. B. Chapin	Middlesex
Treasurer	H. W. Vail	Randolph

Vermont Jersey Cattle Club.

(Dates not made.)

President	H. W. Vail	Randolph
Secretary	T. G. Bronson	East Hardwick
Treasurer	N. S. Boyden	Randolph

Vermont State Horticultural Society.

(Place and date not made.)

President	T. L. Kinney	South Hero
Secretary	Wm. Stuart	8 Wilson St., Burlington
Treasurer	A. M. Vaughan	Randolph

Addison County Fair.

At Middlebury, Aug. 25–26–27–28.

President	J. E. Weeks	Middlebury
Secretary	Fred L. Hamilton	West Salisbury
Treasurer	C. I. Button	Middlebury

Caledonia Grange Fair.

East Hardwick, September 26.

President	G. W. Lovejoy	Hardwick
Secretary	Ezra B. Fay	East Hardwick
Treasurer	W. F. Field	East Hardwick

Caledonia Fair Ground Company.

At St. Johnsbury, September 15–16–17.

President	E. M. Taft	St. Johnsbury
Secretary and Treasurer	Chas. G. Braley	St. Johnsbury

Franklin County Fair.

At Sheldon Junction, September 1–2–3–4.

President	Chas. W. Gates	Franklin
Secretary	W. G. Fassett	Enosburg
Treasurer	G. P. Twigg	St. Albans

Lamoille Valley Fair.

At Morrisville, August 25–6–7.

President	Geo. M. Powers	Morrisville
Secretary	O. M. Waterman	Morrisville
Treasurer	O. M. Waterman	Morrisville

Union Agricultural Society.

At Tunbridge, (dates not made.)

President	N. H. Austin	Tunbridge
Secretary	G. S. Swan	North Tunbridge
Treasurer	H. R. Hayward	Tunbridge

Dog River Valley Fair.

At Northfield, September 15–16–17.

President	Dana H. Morse	Randolph
Secretary	J. H. Winch, M. D	Northfield
Treasurer	H. C. Cady	Northfield

Valley Fair.

At Brattleboro, Sept. 29–30, Oct. 1.

President	James F. Hooker	Brattleboro
Secretary	O. F. Benson	Brattleboro
Treasurer	F. C. Adams	Brattleboro

Orleans County Fair Association.

At Barton, August 8–9–10–11.

President	H. H. Somers	Barton Landing
Secretary	C. A. Barrows	Barton
Treasurer	F. D. Pierce	Barton

Windsor County Agricultural Association.

At Woodstock, September 15–16–17.

President	W. C. Vaughan	West Woodstock
Secretary	C. J. Paul	Woodstock
Treasurer	C. H. English	Woodstock

Springfield Agricultural Association.

At Springfield, September 2 and 3.

President	A. J. Crosby	Springfield
Secretary	Fred C. Davis	Springfield
Treasurer	G. F. Leland	Springfield

Also in Vermont Stake Race Circuit.

Sherbrooke Fair.

At Sherbrooke, Canada, Aug. 29 to Sept. 5.

REPORT

OF THE

THIRTY-EIGHTH ANNUAL MEETING

OF THE

Vermont Dairymen's Association

1908.

Compiled by F. L. DAVIS, Secretary

MONOTYPED AND PRINTED BY
THE P. H. GOBIE PRESS
BELLOWS FALLS, VT.
1908

AN ACT TO PROMOTE THE DAIRY INTERESTS OF VERMONT.

It is hereby enacted by the General Assembly of the State of Vermont:

SECTION 1. The sum of one thousand dollars is hereby appropriated annually to the Vermont Dairymen's Association, for the purpose of promoting, developing and encouraging the dairy interests of this State.

SEC. 2. The Auditor of Accounts is hereby directed to draw an order on the State Treasurer in favor of the Treasurer of the Vermont Dairymen's Association, for the first payment of this appropriation on the first day of January, A. D. 1889, and annually thereafter so long as the conditions hereinafter provided shall be complied with.

SEC. 3. Said Vermont Dairymen's Association shall hold an annual meeting, continuing for at least three days, at some town or city in this State of easy access to the people, and in some comfortable and convenient building; and said meeting shall be open and free to the people of the State. At said meeting the best available talent in the country shall be employed to teach and discuss the best methods of dairy farming, and subjects connected therewith; and at the said annual meeting, premiums shall be offered for the best dairy products of butter and cheese, to an amount of at least two hundred dollars; such premiums to be awarded by disinterested and expert judges, and paid by the Treasurer of said Vermont Dairymen's Association.

SEC. 4. The Secretary of the Vermont Dairymen's Association, shall, on or before December 1, 1889, and annually thereafter, make a detailed and itemized account to the State Auditor of Accounts, of the receipts and expenses of said Association, which accounts shall be approved and countersigned by the Treasurer and Auditor of said Association.

SEC. 5. If, in any year it shall appear to the State Auditor of Accounts that any part of the preceding annual appropriation remains unexpended, or has not been honestly or judiciously expended, then such a part or amount shall be deducted from the order for the next succeeding annual appropriation.

SEC. 6. This act shall take effect from its passage.

Approved November 19, 1888.

AN ACT TO PROVIDE FOR THE PRINTING OF THE REPORT OF THE VERMONT DAIRYMEN'S ASSOCIATION.

It is hereby enacted by the General Assembly of the State of Vermont:

SECTION 1. Section two hundred and forty-seven of the Vermont Statutes shall be amended to read as follows:

The Secretary (of Board of Agriculture) shall prepare on or before the 30th day of June annually, a detailed report of the proceedings of the Board with such suggestions in regard to its duties and the advancement of the interests herein specified as may seem pertinent, and he may append thereto such abstracts of the proceedings of the several agricultural societies and farmers' clubs in the State as may be advisable and the report of the Vermont Dairymen's Association. The report shall show under separate heads the work of the Board relating to the different subjects herein mentioned.

SEC. 2. The provision of section two hundred and fifty-one of Vermont Statutes requiring the printing of a report by the Vermont Dairymen's Association is hereby repealed.

Approved November 4, 1896.

CONSTITUTION.

SECTION 1. This organization shall be called the "Vermont Dairymen's Association."

SEC. 2. Its object shall be to improve the dairy interests of Vermont, and all subsidiary interests.

SEC. 3. This Association shall consist of such persons as shall signify their desire to become members, and pay the sum of one dollar, and a like sum annually thereafter, and of honorary and corresponding members.

SEC. 4. The payment of five dollars shall constitute a life membership, or the payment of an annual membership fee of one dollar for five consecutive years shall constitute a life member.

SEC. 5. The officers of the Association shall be a President, two Vice-Presidents (one from each Congressional District), a Secretary, Treasurer and Anditor, who shall constitute the Executive Committee, and have the general oversight of all the affairs of the Association.

SEC. 6. There shall be held, during each winter, an Annual Meeting, at such time and place as the Executive Committee may designate, for addresses, discussions, exhibitions, and the election of officers, who shall hold their respective offices for one year, or until their successors are chosen. Said meeting shall continue in session at least three days.

SEC. 7. It shall be the duty of the Secretary to prepare an annual report of the transactions of the Association for the current year, embracing such papers, original or selected, as may be approved by the Executive Committee, and cause the same to be published and distributed to the dairymen of the State of Vermont.

SEC. 8. The Treasurer shall keep the funds of the Association and disburse them on the order of the President or Vice-President, countersigned by the Secretary, and shall make a report of the receipts and expenditures to the Annual Meeting.

SEC. 9. This constitution may be amended at any Annual Meeting by two-thirds vote of all the members present.

OFFICERS OF THE VERMONT DAIRYMEN'S ASSOCIATION.

PRESIDENT.

C. H. EDDY, ... Stowe

VICE-PRESIDENTS.

B. A. HATT, ... South Ryegate

J. B. CANDON, ... Pittsford

SECRETARY.

F. L. DAVIS, ... North Pomfret

TREASURER.

M. A. ADAMS, ... Derby

AUDITOR.

C. F. SMITH, ... Morrisville

Miss G. Sadie Smith, Stenographer, Rutland.

FIFTY DAIRY RULES.

From Bureau of Animal Industry,
Washington, D. C.

The Owner and His Helpers.

1. Read current dairy literature and keep posted on new ideas.
2. Observe and enforce the utmost cleanliness about the cattle, their attendants, the stable, the dairy, and all utensils.
3. A person suffering from any disease, or who has been exposed to a contagious disease, must remain away from the cows and the milk.

The Stable.

4. Keep dairy cattle in a room or building by themselves. It is preferable to have no cellar below and no storage loft above.
5. Stables should be well ventilated, lighted, and drained; should have tight floors and walls, and be plainly constructed.
6. Never use musty or dirty litter.
7. Allow no strong smelling material in the stable for any length of time. Store the manure under cover outside the cow stable, and remove it to a distance as often as practicable.
8. Whitewash the stable once or twice a year. Use land plaster in the manure gutters daily.
9. Use no dry, dusty feed just previous to milking; if fodder is dusty, sprinkle it before it is fed.
10. Clean and thoroughly air the stable before milking. In hot weather sprinkle the floor.
11. Keep the stable and dairyroom in good condition, and then insist that the dairy, factory, or place where the milk goes be kept equally well.

The Cows.

12. Have the herd examined at least once a year by a skilled veterinarian.

13. Promptly remove from the herd any animal suspected of being in bad health and reject her milk. Never add an animal to the herd until certain it is free from disease, especially tuberculosis.

14. Do not move cows faster than a comfortable walk while on the way to place of milking or feeding.

15. Never allow the cows to be excited by hard driving, abuse, loud talking, or unnecessary disturbance; do not expose them to cold or storm.

16. Do not change the feed suddenly.

17. Feed liberally, and use only fresh, palatable feed-stuffs; in no case should decomposed or mouldy material be used.

18. Provide water in abundance, easy access, and always pure; fresh, but not too cold.

19. Salt should always be accessible.

20. Do not allow any strong flavored food, like garlic, cabbage, and turnips, to be eaten, except immediately after milking.

21. Clean the entire body of the cow daily. If the hair in the region of the udder is not easily kept clean, it should be clipped.

22. Do not use the milk within twenty days before calving, nor within three to five days afterward.

Milking

23. The milker should be clean in all respects; he should not use tobacco; he should wash and dry his hands just before milking.

24. The milker should wear a clean outer garment; used only when milking, and kept in a clean place at other times.

25. Brush the udder and surrounding parts just before milking, and wipe them with a clean, damp cloth or sponge.

26. Milk quietly, quickly, cleanly, and thoroughly. Cows do not like unnecessary noise or delay. Commence milking at exactly the same hour every morning and evening, and milk the cows in the same order.

27. Throw away (but not on floor, better in the gutter) the first few streams from each teat; this milk is very watery and of little value, and it may injure the rest.

28. If in any milking a part of the milk is bloody or stringy or unnatural in appearance, the whole mess should be rejected.

29. Milk with dry hands; never allow the hands to come in contact with the milk.

30. Do not allow dogs, cats, or loafers to be around at milking time.

31. If any accident occurs by which a pail full or partly full of milk becomes dirty, do not try to remedy this by straining, but reject all this milk and rinse the pail.

32. Weigh and record the milk given by each cow, and take a sample morning and night, at least once a week, for testing by the fat test.

Care of Milk.

33. Remove the milk of every cow at once from the stable to a clean, dry room, where the air is pure and sweet. Do not allow cans to remain in stables while they are being filled.

34. Strain the milk through a metal gauze and a flannel cloth or layer of cotton as soon at is is drawn.

35. Aerate and cool the milk as soon as strained. If an apparatus for airing and cooling at the same time is not at hand, the milk should be aired first. This must be done in pure air, and it should then be cooled to 45° F. if the milk is for shipment, or to 60° F. if for home use or delivery to a factory.

36. Never close a can containing warm milk which has not been aerated.

37. If cover is left off the can, a piece of cloth or mosquito netting should be used to keep out insects.

38. If milk is stored, it should be held in tanks of fresh, cold water (renewed daily), in a clean, dry, cold room. Unless it is desired to remove cream, it should be stirred with a tin stirrer often enough to prevent forming a thick cream layer.

39. Keep the night milk under shelter, so that rain cannot get into the cans. In warm weather hold it in a tank of fresh, cold water.

40. Never mix fresh warm milk with that which has been cooled.

41. Do not allow the milk to freeze.

42. Under no circumstances should anything be added to milk to prevent its souring. Cleanliness and cold are the only preventatives needed.

43. All milk should be in good condition when delivered. This may make it necessary to deliver twice a day during the hottest weather.

44. When cans are hauled far they should be full, and carried in a spring wagon.

45. In hot weather cover the cans, when moved in a wagon, with a clean wet blanket or canvas.

The Utensils.

46. Milk utensils for farm use should be made of metal, and have all joints smoothly soldered. Never allow utensils to become rusty or rough inside.

47. Do not haul waste products back to the farm in the cans used for delivering milk. When this is unavoidable, insist that the skimmed milk or whey can be kept clean.

48. Cans used for the return of skimmed milk or whey should be emptied and cleaned as soon as they arrive at the farm.

49. Clean all dairy utensils by first thoroughly rinsing them in warm water; then clean inside and out with a brush and hot water in which a cleansing material is dissolved; then rinse, and lastly sterilize by boiling water or steam. Use pure water only.

50. After cleansing, keep utensils inverted, in pure air, and sun if possible, until wanted for use.

LIFE MEMBERS OF THE VERMONT DAIRYMEN'S ASSOCIATION—1908.

Adams, G. H	South Barre
Adams, M. A.	Derby
Allen, Charles	East Berkshire
Armstrong, A. B	Dorset
Allen, H. A	West Milton
Allen, Henry.	Pawlet
Adams, William H	Keene, N. H.
Aseltine, M. L.	North Fairfax
Aldrich, E. O	Shrewsbury
Adams, G. W	Stowe
Akley, E. H	Dummer
Aitken, George	Woodstock
Allen, G. A	West Brattleboro
Badger, C. A	Williamstown
Burnett, R. E	Bethel
Burbank, J. A	North Pomfret
Burr, L. R	North Clarendon
Blake, Geo. Boardman	156 Congress St., Boston, Mass.
Bronson, T. G	East Hardwick
Bell, C. J., Ex-Gov.	East Hardwick
Barstow, J. L	Burlington
Brownell, C. W	Burlington
Briggs, Nelson	Brandon
Brigham, William O	Bakersfield
Buck, Abner	Buck Hollow
Buck, A. N	North Ave., Burlington
Burt, William	Essex
Burt, Frank	Enosburg Falls
Ballard, B. M	Fairfax
Blair, N. B	Morrisville
Bliss, Abner	Georgia
Beecher, H. A	Hinesburg
Bates, A. E	Huntington
Barnum, Ell	Plainfield, R. F. D. 1
Bent, C. C	Marshfield.
Brown, J. S	Plymouth

Bishop, D. B	North Williston
Byington, C. M	Charlotte
Beach, H. F	Vergennes, R. F. D.
Briggs, E. L	No. Pomfret
Burnett, E. A	University, Lincoln, Neb.
Bond, John,	East Montpelier
Blood, W. O	Norwich
Bass, E. L	Randolph
Blake, William H	Swanton
Bruce, H. C	Milford, N. H.
Bell, F. C	Swanton
Barry, Leonidas	Springfield
Brothers, H. F	Hinesburg
Brackett, W. R	9 Chatham St., Boston
Bean, G. C	Coventry
Belden, H. W	Waitsfield
Bickford, F. H	Bradford
Buxton, J. E	Middletown Springs
Brock, L. F	Barnet
Brainerd, E. P	St. Albans
Bristol, R. T	Vergennes
Bushnell, J. H	Williston
Barber, E. L	North Williston
Bushnell, H. N	Waitsfield
Butler, F. G	Hartford, Conn.
Burrell, D. H	Little Falls, N. Y.
Baker, J. W	Syracuse, N. Y.
Brewer, J. R	Hingham, Mass.
Burghan, W. H	Montpelier
Beach, W. V	Charlotte
Bent, Orrin	57 Quincy Market, Boston, Mass.
Brown, B. B	Williston

Conn. Agl. College	Storrs, Conn.
Clifford, A. P	North Pomfret
Cushman, G. L	75 S. Market St., Boston, Mass.
Carpenter, E. P	West Waterford
Chaffee, J. H	East Enosburg
Cilley, S. T	Fairfax
Congdon, Edwin	Clarendon
Cannon, LeGrand B	Burlington
Cahee, J. L	Brandon
Cahee, L. J	Brandon
Currier, P. W	Montpelier
Clarke, M. S	Clarendon

Coburn, J. A	East Montpelier
Coburn, J. L	East Montpelier
Cambpell, H. W	Holdridge, Neb.
Cutts, H T	Orwell
Colburn, H. E	Rutland
Chapman, J. H	West Rutland
Crampton, M. S	Rutland
Chapin, Wm	Middlesex
Cowden, H	St. Johnsbury
Colvin, J. C	West Rutland
Cunningham, W. F	St. Albans
Colburn, R. M	Springfield
Crampton, Charles A	St. Albans
Curtis, J. K	Georgia
Chapman, George A	Williston
Cooley, William	Waterbury
Cobb, C. H	Westford
Crane, George	Brookfield
Chase, C. P	Proctorsville
Chandler, G. C	Montpelier
Claflin, G. H	St. Albans
Chase, Perry	East Fairfield
Carpenter, O. G	Cambridge
Colburn, H. W	North Pomfret
Candon, J. B	Pittsford
Choate, C. A	West Barnet
Cloverdale Creamery	North Underhill
Chamberlin, H. D	McIndoes Falls

Daley, O. W	W. R. Junction
Donahue, W. C	Monkton
Draper, F. W	Enosburg Falls
Dana, E. Y	North Pomfret
Donahue, J. F	Vergennes
Doe, G. A	Newbury
Dutton, F. B	Woodstock
Davis, G. A	Rutland
Donahue, W. F	Ferrisburg
Donahue, T. E	Hinesburg
Dodge, Harrison	Morrisville
Davis, George	East Montpelier
Donahue, D. G	East Charlotte
Dwinell, L. G	East Calais
Dwinell, Albert	East Calais
Davis, George F	Cavendish

Dewey, Ed	Montpelier
Dewey, Charles	Montpelier
Davis, C. H. E	Healdville
Douglass, B. J	Pittsford
Davis, F. L	North Pomfret
Denio, W. B	East Rupert
Douglass, W. B	Williston
Dagon, M. R	Madison, Wis.
Deal, T. M	Fort Covington, N. Y.
Dreman, R. E	State College, Ames, Iowa
DeTlestrup, F	Burlington

Dunsmore, Geo. H	St. Albans, R. F. D.
Dodge, L. B	Barre

Eldred, H. S	Sheldon
Evarts, A. D	Bristol
Ellis, I. L	Middlebury
Eaton, I. H	Plainfield
Eddy, H	Waterbury Center
Edson, E. A	Chester
Eddy, C. F	Stowe

Farm Stock Success	Chenango N. Y.
Foster, F. O	Landsing, Mich.
Flint, J. S	155 Loomis St., Burlington
Flint, J. P	Montpelier
Fisher, L. C	Cabot
Farrington, C. W	West Danville
Fletcher, William	Essex Junction
Fassett, G. S	Enosburg
Fisher, D. W	Rutland
Ferson, B. W	Brandon
Fassett, B. F	Enosburg Falls
Fassett, W. G	Enosburg
Fuller, C. C	Jonesville
Fassett, A. B	East Berkshire
Field, D. L	West Milton
Forbes, D. A	Orwell
Frink, W. B	Swanton
Freeman, H. O	Sherburne, N. Y.
Fowler, F. E	S. Royalton
Fletcher, A. M	Cavendish
Fraser, W. J	Urbana, Ill.
Gale, P. R	Stowe

Grout, L. D	Morrisville
Giddings, W. A	Bakersfield
Grout, J., Ex-Gov	Derby
Gibson, J. P	Mt. Holly
Gloyd, Jesse	Richmond
Gilman, A. A	Randolph Center
Gleason, H. C	Schrewsbury
Goodspeed, Nelson	St. Albans
Graves, C. O	Waterbury
Gallup, J. A	West Woodstock
Greene, G. F	South Pomfret
Gates & Son, Chas	North Hartland
Gilson, Truman	Suncook, N. H.
Gale, J. E	Guilford
Goss, W. G	R. F. D, No. 4, St. Johnsbury

Howie, Mrs. A. F	Elm Grove, Wis.
Hewitt, J. D	Quechee
Hill, W. N	Starksboro
Hathaway, F. M	St. Albans Bay
Hooper, V. A	Fayetteville, Ark.
Hatt, B. A	South Ryegate
Hastings, S. J	Passumpsic
Harvey, Cloud	Barnet
Hibbard, C. A	Burlington
Hills, J. L., Prof	Burlington
Humphrey, A. O	Burlington
Hayward, G. M	Middlebury
Heller & Merz Co	22 Cliff St., New York
Holden, Eli	Barre
Holliston, E. B	Manchester Center
Hotchkiss, C. A	Georgia
Hefflon, Franklin	Highgate Center
Haskins, Hon. Kittredge	Brattleboro
Hutchinson, William	Norwich
Hill, H. C	Isle LaMotte
Hillis, E. C	North Montpelier
Howard, Ernest S	West Hartford
Hall, L. C	Westford
Herrick, A. A	West Milton
Hall, Charles	Montpelier
Head, George G	Montgomery
Harwood, J. W	Orwell
Hines, Ed	Pittsford
Hewitt, Stephen	North Pomfret

Howe, W. H	South Royalton, R. F. D.
Hayes, J. R	Strafford
Hitchcock, Ernest	Pittsford
Higley, Nathan	Richmond
Hodges, R. W	Randolph Center
Hopkins, Daniel	Waterbury Center
Huse, S. R	Waterbury Center
Hazen, C. D., Jr	Wilder
Harwood, Burr	Dorset
Harris, S. L	Proctor
Huntley, George M	Westford
Healey, W. M	Dudley, Mass.
Hopkins, Hermann, Jr	Sheldon Junction
Hannum, P. C	Weston
Harrington, W. H	North Pomfret
Hastings, C. A	Springfield
Hayward, F. R	Topsham
Heath, W. E	Sharon

Iowa State Library	Des Moines
Isham, Ed	St. George

Jones, E. H	Waitsfield
Jackson, L. A	Hartford
Jackson, J. J	Morrisville
Johnson, Arthur	East Ryegate
Johnson, A. B	Malone, N. Y.
Jaynes, R. F	Waterville, Me.
Jewett & Son	Middlebury
Jones, G. M	Waitsfield
Jenne, A. M	Richford, R. F. D.

Kingsley, C. J	W. Salisbury
Kelley, G. A	Marshfield
Kingsley, H. E	Montgomery
Kinerson, J. R	Peacham
Kidder, N. D	Hastings, Neb.
King, M. D	Woodstock
Kneeland, D. A	Waitsville
Kinfield, Frank	Morrisville
Kimball, E. M	Enosburg Falls, R. F. D.

Lyster, H. L	Wells River
Lane, C. B., Dairy Div	Washington, D. C.
Leonard, N. O	Fairfax

Lord, W. H	Mechanicsville
Lane, B	Newport
Loveland, Aaron	Norwich
Lyster, T. H	St. Johnsbury
Lawrence, Henry	St. George
Lawless, C. C	Montpelier
Le Page, Chas	Barre
Loveland, J. H	Norwich
Leary, J. A	Jericho
Leonard, W. B	Barton Landing
Lewis, M. J	Woodstock
Lewis, A. L	Rochester
Lilley, C. M	Marshfield

McCuen R. W	Vergennes
Monrad, J. H	173 Chambers St., New York
Maynard, H. S	Bakersfield
Mann, J. M	Fairhaven
Marvin, Thomas	Montpelier
Moseley, F. W	Clinton, Iowa
Miller, M. H	Randolph
Messer, F. A	Greensboro
Montgomery, Roy	Warren
Moore, A. A	Richford
Morse, D. H	Randolph
Maxham, G. R	Woodstock
Merrill, H. J	Fairfield
Milligan	Walden
Macomber, D. H	Essex Junction
McMahon, C. L	Stowe
Macomber, W. H	Westford
McLam, J. F	West Topsham
Macomber, F. H	Shelburne
McNall, J. M	Milton
McGaffey, E. E	101½ S. St., Concord, N. H.
Martin, C. D	East Corinth
Melvin, A. D	Chief of Bureau, Washington, D. C.
Mass. Agl. College	Amherst, Mass.
McCauley, D. E	Shoreham
Nelson, David	34 Allen Ave., Springfield, Mass.
Newton, C. H	Fargo, North Dakota
Nash, D. W	Beldens
Nay, Y. G	Montpelier
Northrop, P. B. B	Sheldon
Newell, Bigelow	Stowe

Newton, A. J	Wallingford
Newton, W. G	St. Albans, R. F. D.
N. H. Agl. College	Durham, N. H.
N. Y. State Library	Albany, N. Y.

Oliver, J. C	Charleston

Page, L. B	Randolph Center
Parker, F. J	Grand Isle
Parker, J. B	Whiting
Patten, J. P	Williston
Paine, C. S	South Randolph
Page, C. S., Ex-Gov	Hyde Park
Pierce, G. W	Brattleboro
Powers, William	Brandon
Peck, Cassius	Burlington
Perry, S. E	South Pomfret
Pierce, J. H	Franklin
Pierce, C. C	East Clarendon
Place, R. H	Essex Junction
Peck, A. M	St. Johnsbury
Perkins, W. E	Pomfret
Palmer, George	New Haven
Palmer, C. E	New Haven
Proctor, F. D. Gov	Proctor
Prouty, G. H., Gov	Newport

Richardson, A. E	Burlington
Rie, Eli	West Charleston
Robie, W. C	Franklin
Russell, F. L	Shrewsbury
Richmond, H. J	Guilford Center
Roberts, D. W	North Pomfret
Reynolds, M. W	Middlesex
Robbins, Henry	Middlebury
Roberts, L. J	Waterbury
Ruggles, E. H	Westford
Rice, H. W	Brookside
Rutherford, W. L	Waddington, N. Y.
Ricker, N. H	Ryegate
Russell, H. L	Cuttingsville
Ridlon, M. H	West Rutland, R. F. D.
Robbins, H. E	Derby
Ryan, D. E	Orwell

State Dairy Bureau	State House, Boston, Mass.
Shackford, Mrs. C. J. Nelson	Ryegate
Stone, W. P	Strafford
Sawyer, A. G	Topsham
Stafford, Charles	Chippenhook
Spear, V. I	Randolph
Strong, P. W	North Pomfret
Symms, E. E	Ryegate
Slocum, A. R	South Burlington
Stanhope, Spencer	Berkshire Center
Stevens, S. H	Enosburg Falls
Snell, T. T	North Enosburg
Stiles, G. M	Morrisville
Standard Package Co	Board Trade B'ld'g, Boston, Mass.
Stevens, Wm. Stanford	St. Albans
Small, Fred M	Morrisville
Stevens, N. C	West Glover
Sanderson, W. L	Milton
Sanderson, C. P	Milton
Sowles, A. P	St. Albans
Smead, C. D	West Brookfield
Seeley, H. M	Middlebury
Smith, C. F	Morrisville
Spaulding, L. C	Poultney
State Library	Concord, N. H.
Sherburne, A. E	North Pomfret
Stoddard, M. A	Rutland
Smith, N. E	Richford
Smith, Francis	Swanton
Smith, F. V	Stowe
Smith, George G	St. Albans
Snow, F. M	East Montpelier
Simpson, W. G	Waterbury Center
Strong, G. N	No. Thetford
Sowles, E. A	St. Albans
Smith, E. C., Ex-Gov	St. Albans
Sprague, N. T., Jr	Brooklyn, N. Y.
Smith, E. A	Boston, Mass.
Smith, F. B	New York
Snow, Mrs. Edward	Swanzey, N. H.
Sprague, Geo. K	East Brookfield
Swan, P. B	Montgomery
Scarff, C. W., Col	South Burlington
Storrs, A. A	East Bethel
Scribner, D. C	Charlotte

Stone, E. A	Williamstown
Seaver, W. H	Woodstock

Towne, E. B	Milton
Taylor, A	Burlington
Turnbull, J. G	Barton Landing
Tarbox, C	Jericho
Towle, E. R	Enosburg Falls
Thompson, Eben	North Danville
Teachout, S. D	Essex Junction
Tarbell, E. S	Montgomery
Terrill, G. H	Morrisville
Tottingham, L. H	Shoreham
Talcott, D. I	Williston
Talcott, L. F	Williston
Talcott, J. I	Oakland, Cal.
Talcott, Frank	Williston
Tarwell, F	Hampton, N. Y.
Terrill, M. W	Middlefield, Conn.
Terrill, A. W	Morrisville
Temple, G. H	Randolph Center
Towle, W. W	Enosburg Falls
Trescott, A. J	W. Rutland

Union Associated Press	47 Ann St., N. Y. City

Vt. Creamery Co	Barton, Vt.
Vail, H. W	Randolph
Van Patten, W. J	Burlington

Whitaker, G. M	Inspection Staff, Washington, D. C.
Warren, S. H	North Pomfret
Ware, O. T	Brattleboro
Wilcox, G. I	Woodstock
Whitcher, J. R	Groton
Williams, W. H	Rutland
Wright, Will W	Brandon
Wheeler, N. B	Brandon
Winslow, C. M	Brandon
Wasburn, Chat	Brandon
Williams, N. G	Bellows Falls
Walker, N. S	Clarendon Springs
Wright, Ellen J	Colchester
Woodard, J. S	Enosburg
Wheeler, Curtis	Fairfax

Weed, E. D	Hinesburg
Warren, Rufus	Montpelier
Wheelock, H. R	Montpelier
Walker, Willard	Montpelier
Whipple, Obed, Jr	North Pomfret
Wheeler, F. H	Proctorsville
Whitney, R. W	Springfield
Warner, J. N	St. Albans
Waller, M. D	St. Albans Bay
Whitney, George W	Williston
Whitney, Ed	Minneapolis, Minn.
Wright, H. S	North Williston
Willard, D. S	North Hartland
Whitney, H. O	Williston
Whitelaw, F. R	Randolph
Wheeler, W. H	South Pomfret
White, A. R	East Charlotte
Webster, E. H	Chief Dairy Div., Washington, D. C.
Wallace, Sidney	Waterbury Center
Weston, H. S	Winooski
Walker, H. W	South Woodstock
Williams, G. B	Walpole, N. H.
Williams, J. B	Glastonbury, Conn.
Webb, J. T	New Braintree, Mass.
Whitman, C. D	Fishers Island, N. Y.
Weston, S. H	Winooski
Warner, B. F	Johnson
Wilson, James	Sec'y Agr., Washington, D. C.

NOTE—If any of the members know of anyone on this list that is deceased or have changed their P. O. address, would confer a favor on your Secretary by notifying him of the same.

ANNUAL MEMBERS—1908.

American Farm Product Co	33 So. Market St., Boston, Mass.
Allen, H. L	Orwell
Adams, G. H	So. Barre
Abenaque Machine Co	Westminster Station
Ambros, John	Derby
Allen, F. E	So. Royalton
Badger, C. A	Williamstown
Baker, O. W	Chelsea
Beach, H. F	Vergennes, R. F. D.
Bellows, F. A	Panton
Brigham, E. S	St. Albans
Blair, J. M	Barnet
Bigelow, A. P	Burlington
Blake, Geo. Boardman	156 Congress St., Boston, Mass.
Boutwell, W. C	Gaysville
Bristol, R. H	Vergennes
Bruce, M. R	Passumpsic
Brown, C. P	Woodstock
Briggs, Edgar L	North Pomfret
Ballard, S. S	Montpelier
Brooks, H. K	St. Albans
Burnham, W. N	So. Royalton, R. F. D. No. 2.
Carpenter, O. S	Cambridge
Carrigan, J. B	Pittsford
Candon, J. P	Pittsford Mills
Casey, E. M	Ferrisburg
Campbell, Archie	South Royalton
Carter, W. E	Rutlaud
Cady, W. N	Middlebury
Chamberlin, H. B	Irasburg
Chamberlin, H. D	McIndoes Falls
Chamberlin, W. C	West Newbury
Counsell, A. E	St. Johnsbury
Corliss, N. S	Swanton
Creed, C. A	Pittsford

Cranton, W. S	Rutland
Curtis, A. T	St. Albans
De Tlestrup, F	Burlington
Dewey, H. W	Sidney Centre, N. Y.
Eddy, P. O	Pittsford
Ellis, D. A	Fairhaven
Fish, H. Z	Bristol
Flint, G. E	Bristol, R. F. D.
Fowler, F. E	South Royalton
Gile, L. S	Morrisville
Gidding, E. E	Hubbardston
Gordon, Seth	Chazy, N. Y.
Green, T. A	Newbury
Hall, W. W	Gouverneur, N. Y.
Hall, R. D	Rutland
Hathaway, F. M	St. Albans Bay
Hayes, J. R	Strafford
Hill, W. N	Starksboro
Hewitt, Mary (Miss)	North Pomfret
Hewitt, J. D	Quechee
Hewitt, D. D	Rutland
Hendee, G. F	Pittsford
Howe, Ernest L	South Royalton
Holoran, Hanna (Miss)	Wardsboro
Hill, E. K	E. Barnet
Irish, V. A	Enosburg Falls
Jennings, B. C	East Hardwick
Jones, Frank L	Utica, N. Y.
Kingsley, C. J	West Salisbury
King, Harry	222 Summer St., Boston, Mass.
King, C. M	Benson
Leach, M. B	Essex
Leonard, C. H	North Pomfret
Lewis, C. V	Boston, Mass.
Lilley, J. O	Plainfield
Lord, E. B	Cuttingsville

Lyster, H. L	Wells River
Lilley, Charles M	Marshfield
McDonough, P. H	Hinesburg
McLane, Charles	Topsham
McMayne, W. P	Dorset
Merrill, H. J	Fairfield
Milligan, F. B	Walden
Miller, F. A	South Peacham
Murphy, J. W	Middletown Springs
Morrison, John	Rutland
Miner, S. O	Brattleboro
Noyes, N. C	Sharon
Newton, R. W	South Royalton, R. F. D.
Nelson, F. B	West Salisbury
Nichols, C. A	Newfane
Patch, W. H	New Haven
Porter, W. C	Sharon
Perry, Charles E	Benson
Roberts, Geo. V	Milton
Russell, L. A	Cuttingsville
Russell, F. S	Shrewsbury
St. John, Ernest	Cabot
Smith, W. W	Shrewsbury
Smith, E. E	West Rutland
Strong, G. N	North Thetford
Sprague, W. W	Randolph
Summer, G. H	Tunbridge
Simpson, W. G	Waterbury Centre
Somers, Chester I	Groton, R. F. D.
Sission, Elsworth	Providence, R. I.
Stone, M. S	Montpelier
Sargent, C. L	Thetford Centre
Stearns, F. M	South Hero
Smith, B. A	Shrewsbury
Somers, L. M	Gordon, N. Y.
Shepard, W. F	Barre
Thomas, G. F	Vergennes
Thomas, J. C	Vergennes
True, F. L	Rutland

Varney, W. M	Vergennes
Vance, V. V	St. Johnsbury
Van Allen, E. J	Albany, N. Y.
Walker, D. B	South Royalton
Weeks, W. W	North Clarendon
Wright, G. H	Barnet
Weed, B. W	St. Albans
Whitehill, C. E	Barnet
Westcott, A. J	West Rutland

VERMONT DAIRYMEN'S ASSOCIATION.

THIRTY-EIGHTH ANNUAL MEETING.

The meeting was called to order at 10:30 o'clock A. M. Wednesday, January 8th, in the Rutland Opera House, by the President, D. H. Morse of Randolph. Prayer was offered by Rev. W. H. Spence of Rutland, pastor of the Congregational church.

President Morse introduced his honor, Mayor R. L. Richmond, who gave the address of welcome.

ADDRESS OF WELCOME.

Mr. President, Ladies and Gentlemen:—In giving a little thought as to what should be said to you today in welcoming you to Rutland, it occurred to me that I should address a company of working men and women and that a few lines from Ruskin—a man who worked with both brain and hands—would not be amiss. Ruskin said, "It is only by labor that thought can be made healthy and it is only by thought that labor can be made happy and the two cannot be separated with impunity." Now this is the sum and substance of success. Thought and labor combined makes for success where either one without the other results in disastrous failure. It is easy to be sure that much thought and labor has been expended in building your organization and I welcome you all the more heartily because you are alive. One of your officers assured me that the Governor and Lieutenant-Governor of the State were members, thought also most of the Ex-Governors and Ex-Lieutenant-Governors were on your list, and that he knew that all the prospective Governors and Lieutenant-Governors were members and would be present, but he assured me that this was not a political organization. I suppose all these gentlemen are real dairymen or real farmers, at any rate I shall address my talk to the farmers.

A farmer to be suceessful today must have a working knowledge of nearly all the trades. Stone-mason, bricklayer, carpenter, cabinet maker, plumber, painter, veterinary surgeon and cattle dealer, blacksmith and what not. Any of them may be included in the net-work of the farmer, simply because he cannot afford or hasn't the time to send to town for expert advice every time a puzzle is presented to him. He must be able to decide and to decide quickly as to the best course to pursue. This faculty of decision is well illustrated by the story of the farmer who was elected Governor.

A farmer was elected Governor of his State and about the time he was to take the chair of office, journeyed down to the Capitol leaving his good wife, Melinda at home. On arrival at the Capitol the Governor elect found that nearly all the legislators and officers of the state were accompanied by their wives, and that it was entirely the proper thing to do to have Melinda present, so he sent the following telegram to his brother, who had been left in charge of the farm during his absence. "Bring Melinda on the first train." Now Melinda had never traveled by train in her life and saw no reason to change her mode of living simply because she had a Governor in the family. So the Governor received the following answer to his wire. "Melinda won't come, she's afraid of the engine." The Governor brought his experience in the loading of young stock to bear on the question and soon wrote out and sent the following: "Bill, you blindfold Melinda and back her on the train." It is a great thing to know just what you want and knowing it to be able to get it overcoming the difficulties in the way. If your plans don't succeed one way, don't sit down and bewail your ill-luck, try blindfolding Melinda and backing her on the train.

Vermont is called a little State, but we should not despise little states. In the history of the world some little states have made notable records. Little Palestine, shut in by the sands and the sea gave to the world a religion. From little Greece we get an appreciation of art and literature. From little Iatly, the law. From little Switzerland, the love of liberty and from little Holland, the dawn of peace. What can we say then of little Vermont? She is not large in territory but no state or combination of states has been powerful enough to make her people tremble. There has been enough of bravery, enough of good deeds, enough of honest manhood and womanhood, native, too, of Vermont to crowd every square foot of Texas, big as she is. Bounded on the east by the silver line of the Connecticut; on the west by the Empire state, the president maker. A little strip of God's green earth, we love her. Her influence is not restricted by her narrow boundaries, but Vermont's sons and daughters are known and favorably known from Maine to California, from Michigan to the Mexican line. Bounded on the south by the Old Bay State and Boston culture, and on the north by the Custom house and Canadian line. Just big enough to give us good air. Just small enough to be neighborly.

The names of many farmers of the State stand out prominently. The two Allens and Baker and Warren and Chittenden came to notice from the trying times just before, during and after the Revolution; not forgetting Ann Story and the many noble women of her time. Coming down through the years many more might be mentioned who acquitted themselves nobly in every emergency. Faithful and honest men and women. Large hearts, large brains, large opportunities. Large hearts to wish; large brains to conceive; large opportunities to do. May Vermont's record still continue; brains, hearts and opportunities conspiring to show the best in each man or woman. In giving you this welcome to Rutland, I am greeting you as the descendants and representatives of the noble band, and am only doing what any officer in any city in the State would be glad to do. I do not anticipate any trouble arising from your visit. You have the reputation of being sober men, so our police department will not be over-worked; of being honest men, so our merchants will be glad to see you about their places of business and to wait upon you; of being able men, so our citizens will be glad to meet you and talk with you; of being successful men and successful men find a welcome everywhere and plenty of friends. So we welcome you because you are sober and honest and able and successful. May your visit here be pleasant, your meetings instructive and your return home without unpleasant incident.

Response to the address of welcome was given by Vice President George H. Dunsmore of St. Albans.

Mr. President, Ladies and Gentlemen:—It is certainly pleasant in Mayor Richmond to say such kind words of welcome as have been extended to us by him in behalf of the citizens of Rutland. We are grateful for the privilege given us of the freedom of the city and no doubt many will avail themselves of this opportunity to visit the various industries and institutions in the Marble City. I believe I am safe in saying that the joy of our coming here is not all yours; glad as you may be to have us with you, we are equally pleased to come. These conventions of our Dairymen's Association are coming to be more and more like reunions of a great family, and the members attending them come from every section of the State, and as we get better acquainted with one another we look forward to these meetings with more and more pleasure and if obliged to miss them, we do so with keen regret. It is at least certain that we accepted your invitation with much more alacrity than is displayed by Vermonters, generally, when they are invited to come to Rutland and spend thirty days or more as the guest of the State. Our organization is a large one; at the beginning our membership was composed mostly of butter makers and cheese makers, but times have changed until now the cheese maker in Vermont is almost an unknown quantity and our members are mostly private butter makers, patrons of creameries and condensed milk factories and producers of milk for the retail trade. The last named are increasing most rapidly; but we are still dairymen, all or most of us are milkers of cows, although some have come to the use of the milking machine. We are glad to have the Woman's Auxiliary meet with us and to know that it is in a flourishing condition. As to our own membership, we have lost a good many members by death still our number increases. In fact, the Vermont Dairymen's Association is at the present time the largest organization of its kind. And our ambition is to work the greatest amount of good possible in our line.

PRESIDENT MORSE:—We will now listen to the reports of the Secretary and Treasurer, read by Secretary Davis.

REPORT OF THE SECRETARY OF VERMONT DAIRYMEN'S ASSOCIATION.

Dec. 1, 1907.

Cash on hand Dec. 1, 1906	$ 28.38	
Received from advertisers	412.00	
Membership fees	237.00	
Worcester Salt Co., on badges	35.00	
State appropriation	1,000.00	
		$ 1,712.38
Expended as follows:		
W. M. Adams	$ 57.25	
Miss Josephine Hodges	12.84	
Mrs. Edna Beach	11.85	
Van Ness House	126.25	
H. J. Nelson	1.30	
Whitehead & Hoag Co	52.50	
W. H. Harrington	19.39	
G. L. Cushman	50.00	
Orrin Bent	50.00	
C. M. King	8.32	
Mrs. Adda Howie	131.32	
M. A. Adams	47.78	
R. A. Phierson	48.14	
J. G. Schwink	15.12	
Robinson Edwards Lumber Co	9.55	
Brown & Moore	22.75	
Argus & Patriot	125.45	
Free Press Association	14.00	
W. M. Adams	15.00	
Miss G. S. Smith	54.80	
P. H. Gobie	107.45	
W. M. Adams	45.50	
J. L. Hills	10.99	
C. M. Winslow	6.15	
F. L. Davis	268.88	
M. A. Adams	10.00	
Transferred to premium fund	326.15	
		$ 1,648.73
Balance on hand		$ 63.65

PRO RATA FUND.

Received as follows:

For cheese sold	$ 6.10	
For butter sold	317.50	
For contribution	155.00	
From general fund	266.15	
		$ 744.75

Paid as follows:

For 41 points cheese at $1.25	$ 51.26	
For 554½ points butter at $1.25	693.49	
		$ 744.75

Moved and seconded that the report as read be accepted and adopted. Carried.

President Morse stated to the members of the convention that Dr. Mead of Rutland, had extended to them an invitation to visit his farm at the close of the afternoon session to see the practical operation of the milking machine. This invitation was accepted by a large number of the members, who were taken to the farms in teams, through the courtesy of Dr. Mead.

Appointment of Committee on Resolutions by the President.

Chairman, H. W. VAIL, Randolph;
E. S. BRIGHAM, St. Albans;
F. W. DRAPER, Enosburg Falls.

Vice President Dunsmore occupied the chair during the reading of the President's annual address.

PRESIDENT'S ANNUAL ADDRESS.

Members of the Vermont Dairymen's Association, Ladies and Gentlemen:

We have met in this busy, prosperous and growing city to hold the thirty-eighth annual session of this organization. A city surrounded by the homes of independent farmers; a city crowded with business and professional men, representing every branch of industry—kindred to the thrift and welfare of its people. A city located in the center of a strong county in close proximity to the Green Mountains, covered with a wealth of timber, the base of which lies westward to the lake, and northerly to Canada, the grand agricultural garden of Vermont and a wealth of marble, which has no rival in this or any other country.

Assembled under such auspicious circumstances, and amid such surroundings, after the lapse of a year's prosperity, of good prices for our product, of bountiful crops of a quality specially fine, I beg leave to congratulate you upon a most favorable outlook for a harmonious and profitable meeting. And I further desire to extend my congratulations to the Association on its standing at the commencement of the thirty-eighth year of its existence. From its birth until now it has maintained a steady and healthy growth, and its importance and usefulness is felt and acknowledged throughout the land.

The God of Nature has been lavish with her gifts, as the great number of well filled cellars and barns will furnish fresh proof of. Seldom, if ever, has there been a more prosperous year for the farmers than the one just past. Although there comes from the great money centres of the world a touch of panic, yet there is no reasonable ground for distress among the farmers.

The Honorable C. A. Prouty, Inter-state Commerce Commissioner, speaks at a banquet to New York City bankers regarding "who is who in the final solution of the needless panic," he says as follows:

"This metropolis of yours is so great and so all sufficient unto itself that you sometimes forget that there is anything else in the country. I sometimes think that the business men of New York know less about the true sentiments of the people of the United States than any other class of men. Now these questions, my friends, are not to be settled by bankers and economists and business men who sit around tables like this. They are to be settled by men who do not own low cut vests and who seldom eat at banquets. I have seen these men and I know how they feel. They are intelligent and they are honest, and they have thought more about this subject than you have. They want to do what is right, but right or wrong they want the thing done and they are going to see it done whether you want it or not."

To say the least, Vermont has not experienced any serious ill effects arising from the financial panic that so suddenly come upon the country a short time ago, mainly because that her industries are of a character not so readily disturbed by panics in money matters. That we shall realize in a moderate form, the effects of the stringency is reasonable to expect, but that our main business industries have or will be depressed cannot be really claimed or expected.

The vast wealth produced annually by the farmers of this country furnishes the foundation for all the industries, as relates to exports, to feeding and clothing the world, to settling questions of fluctuations of the money-market in Wall street, is more important, and weilds a greater power than all the other industries combined.

The agricultural interests and resources of the country have kept pace with all other occupations in productiveness and ecomony of management. The value of our farms have gradually and steadily increased, thus furnishing fresh impetus and renewed zeal to engage in agricultural pursuits, besides serving the dual purpose of keeping our brightest boys and girls at home.

If there be one thing more than another that the farmers of Vermont need to be encouraged and strengthened in, it is that of organization and co-operation. The organization of the Vermont Dairymen's Association is a grand illustration of the truth and power of organized efforts. No one familiar with its history, of its growth and development along the lines of advance dairying, can fail to see and acknowledge its wonderful achievements. And, although the Association rivals all others in point of numbers and display of dairy products, and improved dairy machinery, yet there is still a need of more skilled as well as practical help,—hence reinforcements are cordially invited and a hearty welcome will be extended to every loyal worker.

Co-operation all along the line should be our watch-word and guide. What we mean by this is meeting, talking, working, buying and selling together, and in a general way, acting together for our mutual protection and advancement.

The Grange, with its millions of members scattered through out the country, with its representatives filling places of honor and trust, is exerting a powerful influence in exemplifying the power of organized effort. When the 13,000 Grangers of Vermont are reinforced with all the farmers within ber borders, who have so long withheld their support from the Order,—when they shall have a clear conception that the Grange exists entirely for upholding and improving all the conditions of the American farmer,—when men outside the Order reach that stage of discipline that they fully realize the power of organization, and their ability to extend their strength unitedly for their common good, who will doubt the success of their efforts to carry any question founded upon the principle of equity and justice?

Farmers, as a rule, are perhaps inexperienced in talking, while nearly all are good thinkers, hence that which the independent thinker would gladly say to his fellowman, on public occasions, fails to make its impress, except through the journals in circulation, which can be obtained by a small but remunerative outlay. Every observing man cannot fail to be impressed with the power and influence of the press and we should never be lacking in support of it.

The Woman's Auxiliary is now recognized as a feature which adds much to the right influence, character and refinement to the Association. The voice and presence of woman is acknowledged and known to be important to the promotion of every cause which depends upon co-operation and success of the people.

But I promised a short address, realizing that "brevity is a virtue". Our program of speakers is full, and their subjects are of the best and will be replete with sound advice,—hence I leave most of that feature of the program to men who are abundantly capable of imparting it,—men who will occupy your time more profitably than I can.

In conclusion, allow me to say that I note with a gratifying interest the general prosperity and increased membership of this Association, not occasioned by any action or merit of mine, but on account of the united efforts of all its members.

With this session my official term closes and I take this opportunity to thank you one and all for your hearty co-operation and support during my term of office.

Bespeaking for my successor an equally pleasant and profitable journey in discharging the similar duties of the honorable office, and feeling assured that you will extend to him the same loyal support and courtesy you have shown me,—I shall ever cherish with a feeling of pride the grateful memories of you all.

PRESIDENT'S ADDRESS—WOMAN'S AUXILIARY.

MRS. C. F. SMITH, MORRISVILLE.

Mr. President:—

In his annual address before the Vermont Dairymen's Association on Jan. 9th, 1894, President Arms said, "During this meeting there will be offered an opportunity for the formation of a Ladies' Auxiliary in connection with the Dairymen's Association, so that the women of Vermont will have the advantage, which up to the present time, has almost been monopolized by the men."

In accordance with this notice, seventeen ladies from different parts of the State met in the hotel parlors. The President, Hon. H. M. Arms, being present. In his talk he gave good and sufficient reasons why their wives and sisters of Vermont dairymen should accompany the men when they come to these annual gatherings, and have opportunity for discussing those subjects especially interesting to them in their sphere of activity as dairymaids, housekeepers and home makers. An Auxiliary was organized with Mrs. Luna S. Peck as President, Mrs. L. R. Jones as Secretary. Tomorrow the Woman's Auxiliary has existed fourteen years. Previous to this time women had not been very much in evidence at these meetings, excepting of course, the local attendance of those in the vicinity of the meeting place, at one or two of its sessions. Neither had she been called on to any extent to help in the meetings. Although quite a per cent. of the butter and some of the cheese which was brought from year to year to be judged and receive reward according to its merit, was practically made by the wives in the farm dairies of our State, yet but few of them received the benefit of the object lesson, which the many samples of scored butter presented. This bit of retrospect is to refresh the memory of any present, who perchance, may have forgotten that the President of the Dairymen's Association suggested and urged the organization of the Woman's Auxiliary; and also to enlighten any who were not identified with the Association at that time.

I will not regale you at this time with a review of its work, but will say that it is a living organization "true to name," and as ready now as on the day of its inception to live its name and help and aid the Vermont dairymen in every good work. For are not our interests identical? Some will take exception to this statement at a dairyman's meeting when they review the large creamery plants that are now scattered here, there, all over our State, where so much of the cream produced on the farm is made into butter, without any thought or care on the part of the house-wife. And again, when considering the facilities that invention and modern methods have brought to the dairymen, it would seem that the women of Vermont need not give very much of time or thought to dairy work. But listen, at a fair held in a town in this State not many months ago, there was exhibited a cheese which took first premium. All that any man had to do with the making of that cheese was to milk the cows. Again, early in January; 1907, in another town in this Green Mountain State, a woman watched and tended, tended, stirred and watched some cream from the time it flowed from the separator spout, until her knowledge and good judgment (gained by experience) said it was ripened sufficiently and was ready for the churn, which was prepared for it by the self same woman, and with measure in hand she added just the right amount of butter color. This done and the churn cover adjusted, the faithful horse in the tread power outside was set in motion. But this woman of whom we speak did not leave her post, but watched for the golden granules, and when they appeared with dexterous manipulations, washed and salted them; and when at last the yellow mass was on the butter-worker, she stood by, turning the butter and directing the man at the crank, until it was properly worked; together they printed it. It was billed to F. L. Davis, Secretary Vermont Dairymen's Association, and in due time was with one hundred and fifty others samples of butter on the tables in Armory Hall, Burlington. The honorable gentlemen, Orrin Bent and G. L. Cushman, entered the exhibition hall, they passed up and down, and when they emerged from this place *this* butter had a blue card and 98 points.

This is how Levi S. Gile won the first prize, of $15.00 in gold, in the dairy class last year. Do not misunderstand me, I do not relate these circumstances in a fault finding way with either the man or the horse, that they did not do more, but to show, that notwithstanding the cream separators, milk-testers, aerators, improved churns and butter-makers, and by no means least, the scientific knowledge that has come to the dairyman in these later years, yet to be successful, he must have the aid of woman. While woman's work in the dairy is much less laborious than it was a few years ago, yet she takes an interest in what is going on in the domestic company in which she is a partner.

Woman finds her chief interest, however, in the housekeeping and home-making problems, and where is the man who is not also interested in them?

"Home is not merely four square walls,
'Tho' with pictures hung and gilded;
Home is where the affection calls."

Man builds and finishes a house; woman fills it with an indescribable atmosphere, and it is home. This sounds easy, but oh, the responsibilities and possibilities that center in the home. The ideal home presupposes the presence of children, and to them it should be vastly more than Webster defines it, "a dwelling place." The unselfish goodness of the mother and the manly kindness of the father, live in the lives of the children long after all that is left of these parents is a blessed memory. Say not then there are no weighty problems in the home, but rather study to have no impressions in them but that the children can cherish; remembering that examples rather than sermons preach most effectively. Many have said that Vermont's best product was her noble men and women. The good influence emnating from well regulated homes will always be the responsible factor for the quality which "makes good."

Child life in the home is not the only problem that the home-maker needs help in solving. What to do with those we hire, the helpers in the kitchen or on the farm; or how to get on if we are not able to procure these necessary helpers, are perplexing questions which need scientific knowledge and modern invention,—the patience of Job and the wisdom of Soloman,—to solve fully as much as any dairy problem that has ever confronted mankind.

Some suggest that the scarcity of help in rural communities these last few years is largely due to the treatment they have received from their employers. They urge that the hired help should be made to feel welcome. Do we not know that the sturdy yoeman in this New England of ours have level heads, hearts in the right place, and are completely free from aristocratic snobbishness? On large farms, where quite a number of men are employed and boarded with the family, necessitating help from one or more maids, it seems quite a good plan to build a tenement or boarding house. There are very few instances on record of perfect satisfaction where a man and his wife both work for the same people, but the man can work on the farm and the wife live in a tenement house, boarding the rest of the help, without a great amount of friction. The farmer's wife relieved of the care of so many boarders, can quite easily manage the work for her own family. One objection to this plan is the increased expense. But here the difference is not so great as at first might seem, and one item probably not often reckoned, but which should be and would pretty nearly, if not quite, balance the account. I refer to the home-maker's nerves.

There seems to have been more machinery constructed and utilized for out-door and dairy-work, than for the kitchen and laundry. We do have, however, very many labor-saving devices, which were unknown a few decades ago. Science, too, is holding up bright pictures for the near future. Electricity, the wonderful force now so completely controlled, is going to enable the housekeeper of all but the wealthier classes, to speed the departing servant girl. Those who have tested its usefulness, have found it swift and sure with no afternoons off, and no priggish notions to assuage. There are at the present time though, many country and village homes outside the precinct of an electric plant, and to these, science and the United States Government come with denatured alcohol; with the alcohol also comes a constantly increasing list of appliances, so that in a very short time the country house-wife will have equally easy facilities for doing her work as her city cousin, at a much less expense. I believe it is a fact, that the equipment of the latter is much less expensive than the former, owing to the nickel-plated copper articles which have to be used with electricity. There has just recently come on the market an alcohol flatiron, lamp burner, and stove, which operate as readily as those run by electricity, at a cost of one cent an hour, which is cheaper than kerosene. This set of three pieces sells for seven dollars.

Another discovery of very recent date I would like to mention in passing, and which it seems to me every family could test to its own satisfaction with a very small expenditure of time or money, is the fireless cooker; the magic box which prepares your dinner without fire or force, "while you wait". In a very recent bulletin issued from Cornell Experiment Station, this little device was very highly recommended. The commercial article is made of mission oak with padded felt compartments and costs from fifteen to thirty-five dollars, but I think it is claimed that very good results can be obtained with a dry goods box, packed with clean hay, covered tightly.

I have only called your attention to just a few of the many things in which the dairyman and maids of the State should be, and I think are, mutually interested.

Now, Mr. President and members of the Vermont Dairymen's Association, in closing, let me voice what I feel sure is the sentiment of each of the one hundred and fifty members of the Woman's Auxiliary, we hope that this meeting may be more interesting, more practically helpful and more replete with kindly fraternity than any previous session. In the future, may you unhesitatingly mount every round in progression's ladder until you have brought Vermont and the industry you represent on to a plain of unparalleled success.

THE OPPORTUNITY OPEN TO THE PRIVATE DAIRYMEN IN SUPPLYING CREAM TO THE HOME MARKETS.

E. S. BRIGHAM, ST. ALBANS.

If the past few years have done much for the education of the dairyman, they have also done something for the education of the consumer of dairy products. The recent discussions of health boards and newspapers, regarding the dangers from the use of impure milk and impure cream, are causing people to inquire into the sources of their supply of these articles of food as never before. Nearly every town and city in Vermont, in co-operation with our State Board of Health, is maintaining a rigid system of milk and cream inspection. The great demand is for pure dairy products. All of this has brought the dairyman many new problems. I believe, however, that it will ultimately lead to a better market for the private dairyman, who alone has control of all the conditions; a market which will give a satisfactory price for his product and will not fluctuate with the seasons or the years.

In this paper, it is my purpose to discuss the cream market and the opportunities it offers the private dairyman. I hope the Secretary will pardon me if I exceed the limits he set me in this program and do not confine this discussion to our home markets, because the largest cities of New England are all looking for pure cream and are in the future to furnish a market which will be one of the most valuable assets of Vermont's agriculture. Cream has a small bulk in proportion to its value, and the large city may in the interests of economy go farther back into the country for its cream than for its milk supply.

Now, how shall the private dairyman get in touch with this market? If he lives near a town or city and wishes to retail a product he has only to start as in any other business. If he does not wish to do his own retailing he must find a dealer to handle his product for him. Many grocers in Vermont are finding a cream trade a valuable adjunct to their business. If the dairyman must ship his cream to find a market, the express company will aid him in finding such a market, for the revenue they can get for the hauling. In any case the dairyman must advertise, being careful always to be able to make good what he advertises to do. If the dairyman could produce a picture of a neat, little, well kept dairy house and be able to write under it appropriately Geo. Eliot's description of the dairy at Hall Farm in Adam Bede, "The dairy was certainly worth looking at. It was a scene to sicken for * * * in hot and dusty streets—such coolness, such purity, such fragrance of new pressed cheese, of firm butter, of wooden vessels perpetually bathed in pure water".

Who would not want cream that was made and cared for in such a house? It would carry with it a guarantee of purity that would set at rest all fears of microbes and disease.

It is not hard, however, to find a market if the dairyman can convince people that he has something worth giving a trial. The thing which will try his mettle, is to hold and develop that market when it is found. There are certain requirements which must be rigorously met in order to furnish a satisfactory product.

The first of these is that the cream must be of a uniform thickness or consistency. Most markets require a very heavy cream, usually a cream containing 40 per cent. butter fat. If a contract is made with a dealer for a 40 per cent. cream, the dairyman should plan to send him a 40 per cent. cream every day. In shipping in 40 quart cans to a New England city, I have followed the practice of standardizing each can. The cream was run about 45 per cent. in order to allow for variations in running the separator. Each can was tested by the Babcock test and the number of pounds of cream needed to give the required number of pounds of butter-fat per can was computed from this data. Enough skim-milk was added to this amount of cream to fill the can. This method requires some time but it is absolutely fair to both parties, and will pay in handling large amounts of cream. However, by testing the run of separator from time to time and by a little experience the operator may maintain a nearly uniform fat content.

But even with a uniform fat content, the cream will vary with the age and temperature. It is always best to hold it for at least twelve hours at a temperature as low as possible without freezing. This treatment of a 40 per cent. cream will give a very satisfactory consistency.

The practice of adding a compound of lime and sugar, called viscogen, to cream, in order to increase its consistency, is both fraudulent and illegal, unless the product is sold under some other name than pure cream. Dairymen who suffer from competition of this kind should free themselves from it by the aid of the pure food laws.

The other requirements of the market—those of keeping quality and flavor, go together and may be discussed under one head.

We are told that as milk comes from the udder of the healthy cow, it is sterile. It does not remain so long. At the first contact with the outer world it is infected with bacteria. Every particle of dust which finds its way into the milk adds to the infection as does every contact with unclean dairy apparatus. These bacteria will be of various kinds. Ever present will be the lactic bacteria which in their development act upon the milk sugar, changing it to lactic acid and causing the milk to sour. Certain putrefactive bacteria will also be present, as may also the germs of infectious diseases, if the milk be subject to their contamination. Cleanliness in every operation of milking and separating will help to reduce the number of bacteria, but it is safe to say that, however careful the dairyman may be, by the time the cream runs from the separator it will be infected with many kinds of bacteria and the cream will probably be at a tempreature of from 80 to 90 degrees which will be ideal for the development of these germs. Unless the process can be, arrested, the flavor and keeping quality of the cream will soon be spoiled. How is their development to be arrested?

The large cream shipper who separates his cream from milk brought to his factory by patrons, after the bacteria have had a chance for considerable development, solves the problem by pasteurization or heating the cream in a special apparatus to a temperature of about 156 degrees F. for a short time and then cooling it. This operation kills the lactic bacteria and if carefully done, probably destroys all the disease producers. Cream so treated will keep for a long time without souring.

I venture to say, however, that this method is not the best for the private dairyman, even though circumstances would warrant the installation of a pasteurizing plant. It is not the best because heating the cream to the proper temperature of pasteurization reduces its consistency, and it is not best from the standpoint of the public health. The pasteurizing temperature destroys the lactic bacteria, it is true, and probably the disease producers, but it does not destroy the bacteria known as spore formers. These are left alive and since they have no competitors in the struggle for existence their development is rapid whenever the cream is brought to the proper temperature. Their development, however, cause the formation of products in the cream which are injurious. As Jensen says, the cream "seldom sours but gradually putrefies". But since there is no sour taste to warn the customer, he may use the cream after these putrefactive changes have taken place and injury to health may result.

What method then shall the private dairyman pursue? Let us remember that he has all the conditions in his control from the time the milk leaves the cow. A certificate from a competant veterinarian will be a guarantee to the consumer that the cows are free from tuberculosis and that there is no danger from infectious disease,—a much better guarantee, I venture to say, than to trust to pasteurizing to kill those germs if they are present. By cleanliness, too, he may keep the germ content of his milk to the minimum. Then by separating his milk at once before the bacteria have had time to develop, and by running the cream immediately over a cooler containing ice water, which process will reduce its temperature at once to 50 degrees F., he may check the growth of all bacteria. Then if he will put his cream can in ice water and further cool the cream as near as possible to the freezing point, all germ growth will be stopped and as long as it is kept in that condition the dairyman will have a cream of fine flavor, good consistency, and of excellent keeping qualities. Last winter I shipped cream so made to a New England city. The cream can was taken from the ice water in the evening, surrounded with a jacket of non-conducting material and taken to the express office. After riding all night in a heated express car it arrived at its destination in the morning and was used during the day. I never heard a word about sour cream. I have never shipped cream so far in the summer, having a home market for more than we can produce, but I have no doubt it can be done. I believe, however, that our Secretary, Mr. Davis, is making use of this method in shipping cream to a market outside the State, with success throughout the year.

It is safe to say that cream cared for in this way will reach the dealer in practically as good condition as when it left the separator. If it is handled intelligently by the dealer, it will reach the consumer in equally as good condition, and will satisfy any reasonable demand of keeping quality. The worst result any careless handling by either dealer or consumer will be souring of the cream, a condition which is readily discovered by tasting.

Such cream will pass any pure food inspection and cannot be injurious to the public health. I believe its production is the great opportunity of the Vermont dairyman to build up a profitable business which will add to the value of his farm and the pleasure of his work.

DISCUSSION.

MR. DUNSMORE:—I would like to ask the speaker what price he was able to secure for butter-fat by this method of disposing of cream.

MR. BRIGHAM:—I was able to get about 36¾ cents per pound for butter-fat.

MEMBER:—I would like to ask if Mr. Brigham got 36¾ cents for butter-fat last winter when there was a short supply or if that is what he gets the year round.

MR. BRIGHAM:—I have never gotten less than 33 1–3 cents for butter-fat; the price varies from 33 1–3 to 36 cents; generally 33 1–3 cents in the summer, but for cream shipped I have always gotten 36 cents.

ADJOURNMENT WEDNESDAY NOON.

WEDNESDAY AFTERNOON SESSION.

BREEDING AND FEEDING FOR THE DAIRY TYPE.

W. F. McSPARRAN, FURNISS, PA.

It has come about in the economic conditions of American living especially, that the growth of the consumption of dairy products has been uninterrupted and remarkable in its volume. So great, so expanding has been this growth that students of agricultural development now regard dairying as one of the most important branches of agriculture, as it is one of the most remunerative, because when successfully conducted requiring a higher order of skill and a wider knowledge of the laws and forces of nature and in the use and subservience of them to specific purposes than any other line of farming. Good dairying is a science, and as yet is so very new that one at all careful in his statements would not think of calling it an exact science. Indeed, it probably will never be reduced to the point of even comparative exactness, especially in the line of animal breeding and nutrition. It is only the newly taught, the inexperienced or the very wise young man who will have the hardihood to say positively it is thus and so absolutely in animal life. We, who are older in farm animal biological mistakes, move more cautiously, and not so much blazing the way, that others may follow our lead, but rather, perhaps, in case we desire to do so, that we may gracefully ourselves get back.

I trust I made no mistake in thus frankly taking you into my confidence by the inferential acknowledgment I have made that there are many things connected with my subject that I cannot give you an authoritative opinion upon. If I have made the mistake, I throw myself upon your mercy and submit that those among you, with myself, who know not and know we know not all about the cow, can very profitably spend a short time together in discussing such questions that naturally arise regarding the dairy cow. And such as I have I freely give unto you. The title of this discussion presupposes that there is a dairy type, that there is a best type of cows for the dairyman, in contradistinction to a type sought for by and serving the best purpose of the beef man.

Naturally, right here, a special purpose dairy cow man might be expected to pay his compliments to that dairy delusion, known as the dual purpose cow—the one that will make profitable milk all through her life and good, salable beef when her milking usefulness is over. I grant that such a cow would be of inestimable value to the average dairyman, but I cannot encourage the hope any one may entertain of her ever being evolved into a breed fact. Evidently the people who think they can find that breed of cows or make it, want that kind and we can dismiss them with our best wishes. All cows in a given environment were very much alike in their characteristics and tendencies as long as they were in their wild or native state. Improvement only began when men brought them under dominion. No real progress was ever made toward breed improvement until man became a factor in the evolution towards some ideal. The birds in the trees, the rabbits, the squirrels, are of the same size and of the same habits as in the days of our grand-parents. The robin has the same size, the same plumage, the same too-early four o'clock note for my little boy as it had for my father when he was a boy.

Perhaps of all our wild animals the bear has developed most in stature and importance—especially those that get away.

The same may be said of the fishes, for while the old saw has it that, "There are as good fish in the sea as ever were caught", those of us who must listen to tales of piscatorial sport know there is a great tribe of fishes always smart enough to jump the hook; but we observe that the silly ones that get caught, run about the same sizes our fathers brought home when we were boys. So, the better cow waited for man. In her native state she and her consort were both survivals of the physically fittest. They were fleet of foot, and alert to guard against and ward off danger. The cow became a mother and from such scant and uncertain living as she could gather, made the milk till her offspring could shift for himself in his individual struggle for his own survival.

Of course we do not know, but we can easily imagine that improvement of breed was begun by man taking the cow and learning (some men have not learned it yet) that she gave more milk when she had more feed. Then no doubt her daughter, under the influence of a quieter life and fuller feeding, was a milking improvement upon the mother; and some daughters more of improvement than others. The majestic "head of the herd" of course, severed domesticity and spurned it, and maintained his wild dominion on the hills, till some successor grew robust enough to depose him.

No doubt now and then, in a hazy sort of a way, these early breeders wondered that the superior cow did not always give in her female offspring a superior cow also. They did not take into account the prepotent, masterful worthlessness of the sire that came down from the hills. And it was no shame for these early breeders that they knew no better, for they had no Hoard nor professors to teach them; but what shall we say of the breeders of the present day, who have Moses and the prophets and have not learned that improvement is impossible with the scrub sire, come he from the hill or the valley?

We do not know to what extent these pioneer breeders practised inbreeding, but we can imagine they followed it, under their methods, too closely until they saw its evil effects and then they flew off in a tangent from it, for we notice in their lineal descendants the breeders of our present day scrubs, a horror of the practice of inbreeding. Now, inbreeding in itself is not to be condemned as beyond excuse for being done, for inbreed improvement it is one of the most important agencies at our command, when used wisely and in connection with favorable environment and rational, continuous good feeding.

We cannot discuss the good cow from a single outlook. We cannot make her by breeding alone. If we try to do that, then certainly close inbreeding becomes the forerunner of disappointment and disaster. We cannot ignore breeding and depend upon environment in our development of the dairy cow. We cannot say there is nothing at all to be considered but feed, and bring forth our ideal cow from our skill and knowledge in compounding and feeding a balanced ration. We cannot dissect the cow and put a value upon this, that, or the other influence contributing to her production.

First, we must have in mind what to us means dairy type. After we have fixed that well in mind and have a proper realization of the fact that to secure this type means probably a large part of a man's years, and to have a stock of patience, industry and hope we may consider ourselves in good shape and breed our dairy cow.

When we fully realize the length of the work we undertake, when we know we will make many mistakes and that "the best laid plans of mice an' men gang aft agley," only then will we have a proper conception of the absolute and utter folly of trying to work improvement by crossing breeds, as, for instance, cross the Holstein on the Guernsey, with the hope of getting in the issue a cow that will yield the Holstein quantity and the Guernsey quality.

The first breed improvement must have been accomplished by fixing as a prepotent characteristic certain traits in a strain or a family. The reason the first breeders made no progress in producing great milk cows was because of lack of merit in the sire, and lack, also, of prepotent ability on his part of impressing such merit as he may bave possessed on his offspring; and I can think of no way in which this prepotency can have been secured, but by the practice of inbreeding—breeding a type selected male back to his dam, and then breeding the type selected female offspring back to her sire, and from that mating or a series of such matings, choosing, when nearing maturity, a type of male progeny to use in service with sisters and half-sisters, tentatively, and freely with near and remote cousins. It is impossible here and with such time as I think you will allow me to take up this aspect of the breeding question and follow it into some of its important ramifications, but I may add that a great deal of the primary work here briefly outlined may be saved the beginner, in breeding, if he shall intelligently take up the work at the point to which some of our most careful and conscientious breeders have brought it. Thus he will save himself both time and trouble. All over the country are well established herds of different dairy breeds and from these he can safely make his selection.

The calf that is to be a good dairy cow, certainly has a right to be well-born—to be bred with an unquestionably strong dairy record as an inheritance. If the breeder is fortunate enough to own or to be able to acquire meritorious cows of pure blood, carrying strains of high producing capacity, and will use a male of rich inheritance from great sires and dams—not great in the show ring, but in the work of the dairy—to such a man, if he have even ordinary gumption, breeding dairy type animals is a work easy of accomplishment.

But to the other man, the one who has not things so ready made to his hand, building up the dairy herd is not so easy as it may often look. It is this man, this representative of the great American class of farmers, who is eating his bread in the sweat of his face, who can ill afford to make mistakes; this average, struggling, brave hearted burden-bearer that ever should have concern that any message that is sent may reach.

His cows may be a bunch—a job lot—carrying their unwritten pedigrees back to the watering-places—breeding operations of the patient Jacob—and, giving credit where it is due, I may say in passing, that Jacob was probably the first extensive breeder to make a practical application of one of the elements that in breeding operations we now name, environment.

To the man with this assortment of unknowable cows, I have heard the advice sometimes given to sell the whole lot and invest the proceeds in as many good cows as the sum will buy. Now, buying cows is one of the very last ways in the world to get good ones. My advice to such a man would be to get into shape to feed those cows a good full ration for a whole year.

I do not know how it is with the brethren, but for myself, I'll admit I am not smart enough to tell the worth of a cow by looking at her. They say the only way to know a woman is to live with her, and it is pretty much the same with the cow. She may be better than she looks. Then again she may be worse than she looks. As soon as you see some cows you know they should have been steers. It is a waste of time and labor to fool with them. Get rid of them as quickly as possible—they will take the bread out of your mouth; but the more promising ones may surprise you after you have fed them well for about a year and lived with them.

Put them to the test of the scale and the Babcock. Shelter them from storms; be kind to them; in addition to feeding them abundantly do it regularly; don't forget the round year full ration—don't try to fool them on a short, dry pasture by piping them the tune, "Consider, old cow, consider". Better use the up-to-date version—"Corn-fodder, old cow, corn fodder".

If a scrub bull is used to head the herd, make him walk the chalk to the butcher, and in his place put the best bull you can buy from the breed of your choice of dairy breeds. Feed and care for him right and it is likely he will not disappoint you. If at maturity he proves his worth, keep him in use for as many years as possible and until his successor has given proof of his right to the succession. If a matured, tried bull can be bought at the start, and "his papers fit" him, as my friend Collinwood loves to say, so much the better.

Then you have begun to breed for dairy type. The functions of the dairy cow are three: From the food she eats she must maintain her physical well-being; nourish and develop her unborn; and generally furnish milk for her master. What a wonderful creature is the good cow.

There is a limit to the cow's ability to eat, digest and assimilate food, and unless the quantity be full, some function, or perhaps all her functions, will lag; if the quality be lacking from the full quantity she goes under-nourished. It is pretty well settled in our conception of cow nutrition that the medium cow must have at least two pounds of digestible protein a day. Nature is never lavish with protein in corn stover, timothy hay and oat straw, huckleberry bushes and rag weeds, and there is no cow living that can eat enough of such provender to extract therefrom her complement of digestible protein; and I can assure you the man who is breeding for dairy type and thus underfeeding the-to-be mother of the future cow, is feeding for his own disappointment and nullifying the inheritance that should be the birthright of the future cow from her prepotent sire.

But assuming that the calf has been bred right and has been strongly born, it then passes into the hands of the breeder to carry on the work. "All flesh is grass," it has been written. After being well-born all calf, heifer, cow is care and feed. At this stage comes in the necessity of wisdom and patience. All good looking calves do not make good cows. Dairy progress is not bewilderingly rapid and often the way of the progressor is hard.

It is supposed this calf carries the dairy type inheritance from its sire. In the sire, the type was established and encouraged, largely by environment and feed, and these two forces must be operative in encouraging a proper development of the dairy tendency in the offspring. Consequently, the calf and the heifer must be fed with the dairy type in view. One popular conception of the dairy type is a thin skin drawn over the skeleton of a cow, but I say unto you, no man has ever yet starved dairy qualities into a calf or a cow, and it is not worth the beginners while to make the experiment. But many a good cow has been starved into mediocrity by the stinginess or ignorance of her feeder. In the matter of a little more or less fat on the heifer or cow I may quote—"Better the excess than the deficiency".

It is well to remember that the same character of feed that will encourage the cow into well doing as a milker is the kind that will develop the heifer into a cow.

As I have said, if she is big enough to become a mother, at two years or less of age, have her bred back to her own strong sire. Then in feeding the pregnant dairy heifer remember she must make growth, also, and withhold not the abundant and well formed ration. At this time remember, further, that this young thing is performing one of the most wonderful and beautiful marvels of the universe—working out the design of maternity—taking on the obligations of motherhood, and she is in your hands where I will wish you both well and leave her.

Reading of the score of butter and cheese by the Secretary.

Secretary Davis:—We have many good cheese and butter makers in Vermont and for several years I have tried to get our cheese and butter makers to write papers on the method of their manufacture. I have always found it a difficult task. This year it is understood that whoever receives these silver cups must write such a paper to be read at our next meeting. Will F. L. Russell of Shrewsbury, Charles A. Creed of Pittsford, and E. C. Hillis of North Montpelier come forward?

Mr. Russell was the only one of the three called who was present and he came to the front. Secretary Davis advised Mr. Russell that his cheese scored 96 points, and he had the pleasure in presenting to him, in behalf of the Association, the silver cup upon his promise to write a paper as to the manner in which he manufactured his product, to be read at the next annual meeting. *Do you promise ?*

MR. RUSSELL:—This comes to me as a surprise, but as long as the cup has been awarded me I will *promise* to write a paper for the next meeting on methods of manufacturing prize cheeses.

DAIRY CLASS.

Association's Gold Medal and Silver Cup.

C. A. Creed, Pittsford............................Score 98

CREAMERY CLASS.

Association's Silver Cup.

E. C. Hillis, North Montpelier....................Score 97½

CHEESE CLASS.

Association's Silver Cup.

F. L. Russell, Shrewsbury.........................Score 96

Whole number entries butter	107
Highest score	98
Lowest score	88
Average score	94
Whole number entries cheese	6
Highest score	96
Lowest score	94
Average score	95

Note—As each score was published at the time of meeting, and sent each member, we do not think it advisable to publish these again.

Following are the names of those who subscribed and paid to the pro rata fund:

Creamery Package Co., Rutland, Vt	$ 50.00
Worcester Salt Co., New York	35.00
J. B. Ford Co., Wyandotte, Mich	10.00
Heller & Merz Co., New York	10.00
Wells & Richardson Co., Burlington, Vt	10.00
Orrin Bent, Boston	5.00
Geo. L. Cushman, Boston	5.00
	$125.00

319½ points of butter at $1.50	$479.25
27½ points of cheese at $1.50	41.25

Total money paid on butter and cheese..........$520.50
Also three silver cups.

THE DAIRY COW.

GEORGE AITKEN, WOODSTOCK, VT.

Your Secretary did not take the trouble to ask me if I would speak at this meeting, he simply put my name on the program and told me to talk on any subject I pleased, and as the cow is the foundation of all success in the dairy, I propose to talk to you for a few moments on that subject.

Each animal in the dairy herd should represent two distinct values—her value as a milk producer and her ability to transmit this quality to her offspring. These qualities do not come by chance, they are the result of generations of careful breeding and dairy management in forming what we term "the dairy type", and it is only from this class of animals that we can hope to make a profit in the dairy, and I am sorry to say that this is something a great many of our farmers loose sight of altogether.

It has been my privilege as a member of the Cattle Commission and Board of Agriculture, to have seen a great many of our dairy herds, and as I have said often before, I consider that one-third of them, at least, are kept at a direct loss and many others are simply earning their board; although there has been a marked improvement in the last few years, we are still far from getting the best results from our dairy herds.

I am often asked just what constitutes dairy form or type. It is briefly this: As distinguished from the blocky or beef type, we have an open organization, composed of angles rather than squares, the wedge shape, flat bones, broad rump, well spread hocks, large udder, well placed teats, large digestive organs, deep chest, well placed neck, head carried well up, with large expressivee yes, broad muzzle and large nostrils. The term "wedge shape" has been misleading and the cause of many failures among breeders to improve their herds or breed up to an ideal, for the reason that it was taken to mean thin in front and wide in the rear, and that the thinness in front must be carried down through, until the front legs were close together, leaving no room for the heart and lungs, and consequently no constitution or vitality; whereas the top line only should be wedge shaped. The shoulders should spread from top to bottom leaving a wide, deep chest, with fore legs well apart. This conformation is usually accompanied by well spread ribs, leaving plenty of room for the vital organs, the heart and lungs, or what is commonly called constitution.

My experience is that no animal of any kind lacking this conformation will be valuable as a breeder, and it is a sad commentary on cattle exhibitions to see judges place the blue ribbon on a dairy cow because she had this defect the more pronounced than her competitors, and I have often seen otherwise intelligent breeders select a bull to head their herds for no other reason than he had the "wedge shape" carried down through. This has spelled ruin in every case, for nothing will cause a herd to deteriorate so rapidly as using a sire lacking in constitution.

So I would earnestly caution you to be careful in selecting a sire; no matter how many other good qualities he may have, be sure he has a good, vigorous constitution.

Another point to be studied in selecting a sire is his ancestry; see to it that he comes from strong producing lines on both sides, then no matter what your cows are, you will be sure to see an improvement in the young stock.

To show you that I practice what I preach, I had occasion last spring to purchase a bull to head our herd to avoid too much inbreeding. After careful scrutiny of a great many animals, I finally selected one out of a dam who has the best record for continued butter making of any animal I know of. This cow made 2 lbs. 7¾ ounces of butter in 24 hours in a public test on the fair grounds, after being in milk 300 days, and 90 days before calving. This shows that she has the capacity for long continued production.

This is something we ought to strive for, as it is where the profit comes in, and to show you that other breeders are alive to this same fact, I had to pay $1,100 for this calf at public auction, but I was bound to have him as we could not afford to introduce any but the very best into our herd.

This may seem a large price to pay for the head of the herd, but if nothing happens to him, it will be a good investment, and I will try to show you why I could not afford to be careless in introducing new blood into our herd.

We have been breeding this herd for the last 23 years, for the profitable production of butter, and as a sample of what has been accomplished, I will give you the record of one cow taken at random from the records of the herd, a cow that was ten years old when the record was taken. This cow dropped her first calf

Dec. 1, 1896, and from then to Dec. 1, 1904, gave 52,903 pounds of milk, with an average test of 6 per cent. butter-fat, equal to 3,703 pounds of butter, an average of 463 pounds of butter per year for 8 years, and by deducting $46.00 per year for the cost of feed, we can tell at a glance just how much profit she has made, which in this case is $92.50 per year, or $740.00 for the whole period.

Some of you may think that I have figured the cost of feed low and the price of butter high, but the cost of feed is actual and the price of butter is less than we receive, so that I consider the estimate a moderate one, nor is this the best cow in the herd, only a fair average, both in regard to age and production.

And this is not all the profit by any means, for you will readily see that calves from such cows are much more valuable than those from cows giving only 175 lbs. per year, which I believe is about the average for the State.

And as a matter of fact, while I have kept all the heifer calves from this particular cow, I have sold her bull calves at prices which would almost astonish you. I mention these facts to draw to your attention the splendid opportunities we Vermont farmers have in the line of stock breeding of all kinds, not only cattle but sheep, horses and all other domestic animals, for there is undoubtedly some quality in our bracing atmosphere, splendid pastures and pure water, which tends to instill a rugged vitality into our herds and flocks possessed by few other localities. I could give you many instances where animals bred in Vermont have far surpassed in health, vigor, and stamina even those bred and raised in the regions where the different breeds originated, and I would again urge you to take advantage of those conditions and produce such animals as will be in demand from less favored regions all over our broad land.

But you may ask how these results are to be obtained, I don't think I can do better than give you a leaf from my own experience.

Twenty-two years ago when I took charge of this herd and laid down the rule that no cow be kept in the herd unless she made at least 2 pounds of butter per day after dropping her second calf, this rule worked well, for, although for the first few years we had to dispose of quite a number, it is very gratifying to be able to say that for the past eight years we have not had to dispose of a single one, and most of them have gone into the 2-pound class in their two-year-old form and with their first calf.

But we are not satisfied with only the amount of butter made; we want first-class butter and at the lowest possible cost per pound. In order to do this we must not only breed right, but we must handle our young stock so that when they come to maturity they will be able to take the rough fodder grown on the farm and convert it into the highest priced product.

Many people think all that is necessary to build up a herd is to purchase a high priced male and let the progeny take care of themselves. This is a mistake, for in my experience almost as much depends on the training and development of a calf as in its breeding, provided the breeding is always along dairy lines.

It may seem strange to hear me talk about training a cow, as if it was a horse, but it means the same thing. Who would ever think of starting a horse in a race without first developing his muscles and lungs? Now we do not need to develop the same muscles in a cow, but we must develop the digestive organs, because on these organs depend the profit or loss in our business.

I have seen hundreds of well-bred calves ruined by injudicious feeding. Twenty-five years ago when the boom in Jersey cattle was so great that anything with a long pedigree would sell for hundreds and often thousands of dollars, they were taken up by speculators and jockies who bred and fitted them for market.

The calves were raised on highly concentrated food, kept in steam heated stables and blanketed at all times. They came into the sales ring fat and sleek, their skin shining like satin and beautiful from an artistic standpoint, but I have never known one of them to make a profitable dairy cow, no matter what their ancestry was; they were not only ruined for the dairy, but were unfit to produce calves of any value, and the evil effects of this treatment are visible in many herds to this day.

Our method is to take the calf from the cow at birth, feed it whole milk for about two weeks, then gradually dilute with skimmed milk until we take away the whole milk, replacing it with oat meal thoroughly cooked and adding a very small amount of boiled flaxseed meal, and as soon as the calf begins to eat, a little dry bran with early cut hay.

In the summer they are turned out to grass; in winter they run in open yards every day, no matter what the weather is, and are shut up at night in comfortable sheds. As they grow older and are weaned, they get all the coarse fodder they will eat, with plenty of turnips and enough grain to keep them in good growing condition.

This develops their digestive system so that they are able to assimilate and use to the best advantage the nutrition in their food, and when they drop their first calves they are ready for their life work in the dairy, and able to produce strong, healthy offspring for future use.

This method has been very successful, provided always you start with an animal having a good constitution. What I mean by constitution is that conformation which indicates a strong heart and lung power; that is a conformation which gives ample room for those organs to develop; this cannot be fed into an animal but must be bred there, and no animal is worth raising unless these qualities are present.

Now just a word in closing, as to the changing conditions of the dairy business in our State. Some time ago I made the statement that inside of ten years very little butter would be made in Vermont and I see no reason to change that opinion.

The city milkmen are reaching further and further each year and are offering what purports to be better prices than can be got for butter, and therein lies, I am afraid, a double danger; first, in selling milk you are selling the fertility of the farm; and another is your inability to raise calves, so that in a very few years if this system is followed we must purchase an increasing amount of fertilizer and also go outside the State for our dairy cattle.

This will be a calamity and one not easily or quickly remedied. So I would say to you all, that if you don't make butter, sell your product in the form of cream, and go slow in changing from a system which has brought so much prosperity to our Green Mountain State in the past.

MR. AITKEN:—I am sure you will all be pleased at my resignation as Secretary of Board of Agriculture and much more pleased at the selection of the Governor in my successor, who is my friend and your most efficient Secretary, Mr. F. L. Davis. I leave the work in excellent hands and I wish him all the honor and also all the assistance you can give him in the work he is to carry on.

DISCUSSION.

MR. EDDY OF STOWE:—I would like to ask Mr. Aitken if he wouldn't advise the use of Babcock scales in connection with the Babcock tester.

MR. AITKEN:—The two should be used in conjunction. Our method is to weigh the milk of every milking and set it down on a milking sheet; in that way we keep a record of every pound of milk that is produced. We test the milk by a Babcock tester four times during the cows milking period. In that way we get a very close estimate of the butter-fat contained in the milk. By all means use a Babcock tester.

I want to say a word in regard to inbreeding. Unless you are very careful to study the individuality of your animals you will get into trouble. My experience has been that if a sire and dam have a defect in common, that defect is more likely to be transmitted than the good qualities both may possess. There is no denying that great improvement has been made by inbreeding, but I would counsel you to be very careful about inbreeding indiscriminately and I believe Mr. McSparren will bear me out in that.

MR. MCSPARREN:—Possibly I have a habit of cutting myself off too short. My subject was, "Breeding and Feeding for the Dairy Type". I was assuming that a man already had a herd of cows that were not dairy cows, but were a job lot of cows—short horns, Guernseys and Ayrshires and all the other various breeds. Such a man would get good results by an intelligent and judicious use of inbreeding. The man who is able to pay $1,100 for a bull, like our friend Mr. Aitken, has no necessity to follow that rule. My general advice would be to breed a heifer back to her own sire, if you can't get something better to breed her to. Isn't that so Mr. Aitken?

MR. AITKEN:—Yes.

MR. HALL:—I would like to ask about the feeding of calves. I have heard it said that the feed which was good for a cow giving milk was good for a calf. Do you find it so?

MR. AITKEN:—In a general way; I don't think it pays to feed a calf on highly concentrated food; that method has ruined a great many calves. We feed our calves all that is necessary for their growth, at the same time we make them work for it; we don't feed them cotton seed meal; we feed them rough fodder and plenty of roots and that develops the digestive organs, so when they are grown they are able to assimilate food properly; whereas, if they had been raised on highly concentrated foods their digestive organs would not have been properly developed.

MR. HALL:—You say to develop the digestive organs; I have heard it said that it was necessary to develop the milk organs if one wished to have good milkers later on.

MR. AITKEN:—The time to do that is when they are getting ready to come in fresh.

MR. HALL:—Then you would give them gluten?

MR. AITKEN:—No, I would feed bran, but I never try to force the milking period in a heifer until afterwards. I have sometimes had trouble before a heifer comes in. This last week I had to have a man stay in the barn almost night and day to keep a heifer's udder from being ruined by too much milk before she calved. I have no trouble in developing the milking qualities if the animal is well-bred and fed according to the lines I have indicated. We don't feed our cows heavily. We never feed at any time more than six pounds of grain.

Another point I wish to touch upon—that is, in regard to the texture of the skin. Some authorities tell us that a dairy cow must have a thin skin. I won't admit that a thin skin indicates a large flow of milk. I prefer rather a thick, soft, smooth skin. I flatter myself I can go into a herd of Jerseys, for instance, and tell very nearly what the per cent. of butter-fat will be in the milk. The touch of the skin is the best indication I know of in telling whether a cow will give rich or poor milk.

ADDRESS ON CHEESE MAKING.

I. W. STEINHOFF, STRATFORD, ONTARIO.

In the discussion of cheese making and dairying in all its bearings, I have not much that may be considered really new to give to the dairymen of Vermont, but during the forty years or more of dairying in Canada, we have learned a few simple truths. Among them is that the process of cheese making begins at the farm; that the source of a great many of our troubles and defects in flavor of our cheese and butter is due to dirt; that the slipshod methods practised in the patrons in many factories is frequently prompted by slipshod methods practised by unclean cheese makers at the factory; that the process of manufacturing cheese is only partially completed when the cheese enters the curing-room; that the returns to the different patrons of the factory almost entirely depends upon the intelligence exercised upon the farm in the selection and management of the cows; that the exercise of kindness, patience and intelligence is necessary upon the part of any dairyman to secure the best results.

These statements will no doubt seem very simple and among the first that any person of ordinary intelligence might discover in entering the industry, but we find that they really are the matters of greatest importance at the present day and that the patrons and cheese makers, who are strong in the practice of the points indicated, are really the men who are getting satisfactory returns and making a success of dairying today.

In the process of cheese making the first essential is good milk. We at one time worked upon the basis that the process of cheese making started when the rennet was added to the milk, but the instructors and the best dairymen of Canada now are seeking at a greater depth for the basis of good cheese, realizing that unless milk, when it arrives at the factory, is sweet, wholesome and of good flavor, it is impossible to make finest quality of cheese.

Assuming that the milk has arrived at the factory in satisfactory condition, the interest then centres at the weighing stand as the next most important centre. At this point it is very essential that cleanliness, system and promptness be exercised;

the weigher should step on to the stand cleanly dressed and with as attractive appearance and cheerful disposition as can be exercised in order to inspire confidence in those delivering the milk; laughing, talking, and carelessness while weighing milk, giving room for errors and mistakes, has been the foundation of friction and trouble in many cases. Many patrons are now weighing their own milk before it leaves the farm, so that while good weight should be taken at the factory it should always be weighed correctly. This is also the place that largely determines what the product shall be. Milk that is not in good condition should in all cases be refused and followed up by instructions to the producer as to the probable cause of the defect, whatever it may be, and instruction as to how to overcome it. The average intelligent milk producer will not be offended if he is shown that his milk is in bad condition and returned to him, although it means quite a severe loss, but it is quite essential that he should be convinced that the milk is wrong. If the weigher of milk is permitted to be clothed with greasy black garments and untidy appearance, it is unreasonable to expect that he will inspire the confidence of those delivering milk and his appearance, instead of prompting or suggesting cleanliness, has an influence in the very opposite direction.

The milk having been received at the factory and correctly weighed should be run from the weighing can through a double thickness of cheese cotton into the vat. The general practice in Ontario now is to use the acidemeter in determining the proper condition for setting the milk, milling the curd and salting. The acidemeter is recognized as the most reliable test and the milk should be set in just sufficient time to give the curd from 2½ to 3 hours in the whey, sufficient rennet being used to cause complete coagulation within 20 to 30 minutes. The curd is then cut with horizontal and perpendicular knives in small cubes and heat gently applied, the curd being kept carefully but constantly in motion during the process of heating until the temperature is raised to 98 degrees. The cooking of the curd is another very important point in the process of manufacture. Curd that is thoroughly cooked and got out of the whey in sufficient time has gone more than half the way to a perfect cheese. If the hot iron test is applied, the curd should not string more than 1-8 of an inch when the whey is drawn. Lively and thorough stirring with clean hands when the curd is first dipped into the sink until sufficiently drained to become firm and elastic with sufficient body tó make a perfect cheese. During the time that the curd is maturing in the sink, great pains should be taken that no whey is allowed to gather on the curd, otherwise acidy cheese will be the result. Sour whey, when allowed to gather upon the curd, will cause acid cheese as readily as if the curd was allowed to take too much acid before being removed from the whey; it also needs close watching daily, as the results to be obtained are largely dependent upon the changing conditions of the temperature and the food furnished to the cows, so that it may justly be said that "eternal vigilance" is one of the factors of the cost of the production of really fine cheese. Milling being done at the proper stage, the curd should be kept frequently stirred and thoroughly aired in a pure atmosphere until salting time. In many cases, coming under my observation, the bacteria that caused rotten flavored cheese entered the product at this stage while in the sink. I recall one particular instance, in a newly constructed factory where the cement floor had become broken up, where for about three months every cheese that was produced in the factory had a flavor almost as bad as if the curd had come in contact with the contents of a sewer and the cause was traced to the bacteria that had entered the cheese through this broken floor. After the floor had been repaired there was no further difficulty. Filthy sinks or drains or unclean racks and sink cloths are also a prolific cause of bad flavors which enter the curd at this stage.

The Canadian cheese makers have revised their ideas considerably upon the point of quantity salt used in the manufacture of cheese. One of the standing defects of summer cheese in Western Ontario in past years has been that they have been too firm with a tendency to dryness. The cheese makers seemed to have been possessed with the idea that during the hot weather it was necessary to salt the curd heavily in order to instill keeping quality in the cheese and as a result cheese were found showing lack of meatiness. This has been found to be a mistaken idea and instead of 3 pounds of salt for summer cheese, 2 to 2¼ pounds is now the general practice. Only a good brand of dairy salt should be used which is free from scale, black specks or lime. The granular form of fairly coarse grain salt requiring some little time to dissolve is found to give the best results.

When the curd is first put into the press, a very gentle pressure should be applied and the curd given sufficient time for the whey to get free, after which the pressure may be increased until sufficient is applied to make a close, compact and smooth cutting cheese, with complete rind over the entire surface.

Bandaging and turning of the cheese in the hoops should be done only by persons who have sufficient interest to do it neatly and promptly at the proper time. It is at this stage that the surface of the cheese is determined, to a large extent, and care should be exercised. The exterior condition of the cheese is now a consideration in every case in the price to be paid, and the cheese maker who is indifferent to the exterior condition of his cheese is certainly not an up-to-date cheese maker. A buyer, in visiting a factory, finding cheese that are rough in appearance becomes suspicious at once that they will be defective in the inside, consequently such cheese are always subject to more severe inspection than if they were smooth, clean and gilt edge in appearance.

Let us consider the curing room next. This structure must be a place where the temperature can be controlled, in the hottest weather during the summer, under 70 degrees; 60 to 65 degrees is much more desirable and cheese cured at this temperature has a smoother, better texture and will be found very much better in flavor. The circulation of air in the curing room is very desirable. Some of the Canadian curing rooms which are well constructed and complete, so far as proper temperature is concerned, are defective upon this point, allowing the cheese to mould very badly. If proper care is taken in the construction of the curing room, circulation can be obtained. Nearly all well constructed curing rooms now have an ice chamber at one end from which cold air enters the curing room and this in itself will give circulation if a means be provided at the opposite side of the room to draw out the warm or foul air. But the question of proper construction of curing rooms is of sufficient importance itself to form the basis of a longer address than I purpose giving you today. It is absolutely essential that pure air should be at all times in the curing of cheese and that the cheese be turned daily upon clean shelves.

The boxing of cheese has become something of a problem with us in Canada; the supply of soft elm from which boxes have been manufactured up to the present time has become somewhat exhausted and many are now contriving to adopt some other box. Paper boxes have been used in a few cases, but they are not satisfactory. In a number of cases cheese shipped in paper boxes have been badly damaged from being bruised and the paper becoming soft and going to pieces. We received more complaints from Great Britain on the score of boxing than we did upon the quality of the cheese. The delivery of the cheese at the station is a point to be considered of greater importance than that in which it is frequently held. I have been frequently much disappointed and annoyed at the spirit displayed by patrons of factories in the delivery of cheese from the factory to the car. It is the custom in Canada, at many factories, for the patrons of the factories to deliver the cheese, which is practically their own product, but too frequently they manifest a spirit of entire indifference as to what condition the cheese are in when they deliver them. Filthy wagon boxes should not be tolerated and covers to protect the cheese from rain, dust and the heat of the sun should be provided by the factory.

By co-operation on the part of all concerned in dairying with the Government in Canada, it has been accomplished in the way of providing proper transportation facilities for cheese and butter. In the shipment of cheese and butter now to Great Britain, they are protected by refrigerator cars to the seaboard and then cold storage or cool air space in the steamers so that if our cheese start from the factory in proper condition, that condition will be maintained until they reach at least the wholesale houses in Great Britain. This feature of our work has, in Canada, probably accomplished as much as any other during the last few years in placing Canadian cheese in the high regard in which it is held now in the British markets.

DISCUSSION.

W. W. HALL OF NEW YORK:—I would like to inquire if the speaker can inform us as to the per cent. of moisture in what he terms a well made cheese, and if he retains more than he used to a few years ago?

I. W. STEINHOFF:—Yes, the tendency is to retain a little more sweet moisture. Great care must be taken not to have that moisture sour or you get as a result sticky, rather stiff bodied cheese that is unpalatable; but if the moisture is sweet, you can retain a little more and have a softer, more meaty cheese, a well constituted cheese of practically 1-3 water, 1-3 casein, 1-3 fat.

MR. LANDON:—Many of the factories now are operated on a test plan. I would like to ask if milk testing 3½ per cent. butter-fat, and milk testing 4½ per cent. butter-fat, delivered in the same condition, that you would be as likely to get in the cheese as much of the butter-fat from the milk that tested 4½ per cent. as you would from that testing 3½ per cent.

I. W. STEINHOFF:—I think up to 4½ per cent. the experiments that have been made show there is no perceptible increase of fat escape; when you get above 4½ per cent. there is.

I may say that since coming here I have been surprised to learn that the tendency in your State is to go out of the cheese business. However, I don't suppose you would be turning in that direction if you hadn't found some other method of disposing of your milk more profitably. But in Canada I wish to say the question of cheese making is one most profitable to the farmer and this has been established beyond question. Cheese making has done a great deal for the Canadian farmers; it has paid off many a mortgage and put many people on easy street; you can see in the different dairy districts that the inhabitants are prosperous; the farms are in good condition; fences are good; the buildings well cared for, and they are putting money in their pockets right along. The method we have followed in the factories in Canada is a grading test; they add 2 per cent. to the reading and from that basis the profits are distributed. That has been found to work very satisfactorily. In this State I would imagine that cheese factories are running in competition with other factories. I would think the wise method would be to pay for milk according to the fat, adding 2 per cent. and making distribution of profits on that score.

MEMBER:—How many pounds of milk do you allow for making a pound of cheese?

I. W. STEINHOFF:—It varies considerable; we find in some farming districts there is some peculiarity in the product; it may arise from a certain element in the soil, but as an average for the season, it will run 10¼ to 10¾ pounds.

MEMBER:—Do you use a starter?

I. W. STEINHOFF:—Yes, the general practice is to use a starter; care should be taken that the starter is pure, if not, the mischief is worked unless you have a pure starter, right culture, which is really the foundation of your flavoring, you will have trouble.

MEMBER:—Did you ever use sour milk?

I. W. STEINHOFF:—Yes, that is all right, but it should be pasteurized.

MEMBER:—Do you ever cut the curd finer than one-half inch?

I. W. STEINHOFF:—Yes, from three-eighths to five-eighths, but as a rule one-half inch is the better size.

MEMBER:—How do you test the curd for drawing off the whey?

I. W. STEINHOFF:—If a hot iron is used the curd should not have more than one-eighth inch of draw on the iron. If you get your curd of exactly the right consistency you are more than half way in the making of good cheese, but of course if you have too much acidity you can't make a cheese of good texture out of it.

MEMBER:—Do you ever go by the feeling of it instead of using the iron?

I. W. STEINHOFF:—If you mean when I think it is cooked enough,—no, I don't think so, and I think there are few makers who do, I go by the hot iron. Our success in cheese making is largely due to the work of instructors who are teaching the people how to make a uniform quality of cheese.

A word in regard to the amount of milk required to produce a certain amount of cheese. During May and June the milk will probably test lower than any other time. The natural tendency of the cow's milk from the time she starts milking is to decrease in quantity and increase in quality, so that during the month of June it will probably test 3.30 to 3.60; that will gradually go up until September; your fat will test about 4 per cent. In stating 10¾ pounds, I was speaking for the entire season, but in September and October the average will be below that.

MEMBER:—When you have this acid, will it work off in the curing of the cheese?

I. W. STEINHOFF:—I don't quite catch what you mean. I don't think it necessary to get a cheese with too much acid. The trouble lies with the man on the stand, who takes in milk that he should not. If he accepts milk that is over-ripe it is his fault; he is there for the purpose of determining whether the milk is proper to take in. If he takes only milk in its proper condition, he doesn't need to let the acid develop. However, if you get a surplus of acid, either before it is drawn out of the whey or in the curd sink, you cannot reject it altogether.

MEMBER:—Do you allow it to pack in the curd sink instead of in the vat.

I. W. STEINHOFF:—It should be stirred rapidly when it is first dipped. In Western Ontario they use curd sinks with racks and cheese cloth over it. The curd is dipped out of the vat into the sink. In Eastern Ontario they use racks in the vat or they divide the curd and allow the whey to run down the centre and drain it in that way. They stir the curd either in the vat or rack quickly when the whey is first drawn. It is necessary to keep the curd moving and give it a chance to expel the air; if not, and you allow it to mat and do not let the air into it you will have a dead, acidy cheese, unpalatable and one that sticks in your mouth.

MEMBER:—I wish to know if there is any particular improvement in Canada along these lines? What particular improvements have you made over the methods used in Wisconsin and New York?

I. W. STEINHOFF:—Prof. Andrews was one of the most useful men in the line of cheese making that ever came to Canada, but we have made improvements upon his methods,—and I do not say this in a disparaging way of Prof. Andrews and his work. To give you exact improvements, I think I could do it better in talking with you privately, because it is a matter of exercising care at certain points. If you get the curd out of the whey soon enough, with not over one-half inch draw on the hot iron, and then stir it sufficiently, you have a curd that is the basis of a perfect cheese, but after that if the whey is allowed to stand on it, I cannot answer for the consequences. Difficulties may come from other directions, and changes of temperature may be the means of spoiling it, and at different times in the season. These are things we have learned, and a man has to give very close attention and exercise his best judgment in order to take advantage of all things.

MEMBER:—I think perhaps some may be misled by a reply you made to a question in regard to whether or not you use sour milk as a starter. I think possibly you did not complete your answer. As I understand it there would be little object in using sour milk if it were sterlized, as you said it should be in your answer.

I. W. STEINHOFF:—Oh! yes, you do just that. You pasteurize the milk to remove the foreign bacteria before you put in your ferment. After you have sterilized the milk, then you put in your ferment and prepare a starter for the next day.

ADJOURNMENT.

WEDNESDAY EVENING SESSION.

The Opera House Orchestra played several selections, following which Mrs. Ethel Ames Roberts of South Wallingford, gave two readings, "The Pilot Story" and "Angelina". Mr. Lowell D. Kenney of Rutland, tenor, sang two songs, "Eternal Love" and "Star of my Life"; a piano duet was played by Miss Colburn and Mrs. Pike, following which Miss Katherine Candon gave the following paper, "Crumbs Swept Up".

CRUMBS SWEPT UP.

KATHERINE E. CANDON, PITTSFORD, VERMONT.

Before beginning my talk, I feel that I ought to make a few preliminary remarks. Now, I am a sort of general substitute. A couple of years ago I came home to act as substitute in the farm house for my sister, who moved along into a house of her own.

Tonight, I am acting as substitute for several persons who, for doubtless good reasons, disappointed the worthy President in preparing papers for this meeting.

I was informed that the paper which was to have been read now was, "Problems of the Modern Housewife". As it was utterly impossible for me to deal with that problem, I borrowed a title, "Crumbs Swept Up", from T. DeWitt Talmage.

I wish simply to make a few suggestions to you, which I hope you may think of later and perhaps may make use of. In the first place, let us all be glad and proud of the fact that we are farmers—second to none in intelligence, in ingenuity or in social standing.

We should stand before the world as examples of cheerfulness and confidence. In these days when there is so much talk about hard times, shortage of money, increased cost of living, thousands out of employment, etc., the world needs someone to brighten it up a little. And who is better fitted to do this than the farmer? He is never out of work, he has enough to eat and drink, and he has a little money to spend. Why, I heard a farmer say this week that, what with the increased cost of feed, etc., he was just about swapping dollars. And he was so thankful that he was getting a new dollar for the old one he was paying out. "It is easy enough to be pleasant when life goes by like a song. But the man worth while, is the one who can smile when everything goes wrong."

My dear friends—don't hurry, don't rush from early morning until late at night with never a thought for God or ourselves. Newspapers accuse us of the rural districts of a growing indifference toward religion and carelessness in attending religious services. I hope this accusation is not true.

Furthermore, they say that we Americans are losing sight of God in our schools, and they even go so far as to blame the school system. Now, I wish to say that the schools are not to blame. Let us keep sight of God in the home and He will be in the schools. If we find we have not time for religious and social duties, let us stop; there is something wrong in the management. I know a farmer who was doing two days work in one. He left home early in the morning and it was often ten o'clock at night when he returned, working hard all day. Well that man was sick so that he had to lose a few days and he had time to think. He decided to take two days to do that work, which he does with better success and far greater ease. And the world goes on just the same. Now I don't want any of you people to be sick. I wish you all the best of health during this new year. But don't try to crowd too much work into one day.

Are not we farmers trying to do our work with too little help? Would it not be easier for them to find and keep help if they did not work so many hours? In these days of the farm help problem it is worth trying.

Our schools are taking a step in the right direction in introducing industrial education. While it may not be practical to introduce the study of the elements of agriculture into the already overcrowded course of study, the advantage of agriculture as a profession should be brought before our high school boys and girls. When our boys are ready to leave the high school and are perhaps undecided as to what work they would like to take up, if they could have it pointed out to them that a course in intelligent farming will enable them to earn a good livelihood, it will turn their thoughts into new channels.

Are not too many of our young people going in for what they call "higher education"? It is well enough to "hitch our wagon to a star"—but let us keep our feet on the ground.

At a recent educational meeting, our State Superintendent, Mason S. Stone, told us how overcrowded were the professions of law and medicine, and what great numbers of young men flocked to the cities to find employment in what he was pleased to call "high collar" positions. He told us that a large percentage of the street car conductors of Boston had taken college or business courses, but, unable to find positions in what they supposed they were fitted for, they had to take what they could get. We feel like exclaiming with Oliver Wendell Holmes,

"Come back to your mothers, ye children, for shame,
Who have wandered like truants for riches and fame;
With a smile on her face, and a sprig in her cap,
She bids you to feast from her bountiful lap."

If we would keep our young people on the farm, we must make the farm life attractive to them. It is just as true now as it ever was, that "all work and no play makes Jack a dull boy". If the boy is kept working until half past seven or eight o'clock every night, with then nothing to do but go to bed, Sunday the same as Monday, with perhaps an hour or two to himself; he is going to contrast his life with that of his village friend, who has his evenings free with no hateful milking, and Sundays to do as he will.

Now, I think the farmer should have a uniform time for beginning his evening work, so as to be finished at half past six, and, if possible, have it arranged so that each may have a Sunday in his turn.

Right here is where the wives and mothers play an important part. In these days or rural free delivery, telephones, etc., the home on the farm may be made to compare favorably with any home in the village or city in opportunities for bettering ourselves, having good literature and meeting pleasant acquaintances.

Do not let work creep into all our conversations. Make the meal time a time of pleasant relaxation. Did you ever hear of the family whose only remark at the table was "pass the pepper"? That family all died of acute indigestion.

Think of the city family who rush in one at a time to snatch a hurried meal. Compare this with the family on the farm where all have an opportunity to be together at meal time. Why! there is more real living in one day in a farm home than in a lifetime in the city where home is a place to sleep and to eat—sometimes.

Then,—

"Let sailors sing the windy deep,
  Let soldiers praise their armor,
But in my heart this toast I'll keep,
  The independent farmer.

He trusts in God and loves his wife,
  Nor grief nor ill may harm her;
He's nature's nobleman in life,
  The independent farmer."

"A PRACTICAL EDUCATION FOR OUR BOYS AND GIRLS."

K. C. DAVIS, PH. D., DEAN OF SCHOOL OF AGRICULTURE,
CANTON, N. Y.

Ladies and Gentlemen:—I believe all farmer boys and girls should have a practical education. I believe in co-education. If we look about us we will find a new type of agricultural schools being established in many states in the union. It was my pleasure for a number of years to be connected with the state and county school of agriculture at Menomonie, Wisconsin. There are other western states besides Wisconsin and Minnesota that are establishing new schools of agriculture. At the present time the state of Georgia is starting eleven schools of agriculture, one in each congressional district; these were established by a simple statute made by the state legislature, offering to each of the schools a small maintenance fund of $6,000 each, to be obtained from the inspection funds of the state. The result was this, that in each of the congressional districts the people began to bid against each other for the location of these schools in their midst and the bids were high. They offered buildings; they offered money, even as high as $50,000 for a single school; they offered land; they offered free lights, and free water; and the result was in the eleven schools, nearly $1,000,000 has been offered for these schools besides the small state aid.

The plan in Wisconsin was this: The state offered to help in the support of two schools of agriculture to be located anywhere in the state that the people wished them. The result was that two counties immediately erected buildings and established the schools and operated them for one year and then received some state aid. The next legislature increased the number of such schools to four. Those were immediately taken and now the legislature has increased the number to eight, and these are now being established by the different counties.

I have given you the idea of the congressional district plan and the county plan, and now let me call your attention to the state plan as illustrated in New York by the school at Canton, where I am located.

We have a state school of agriculture, entirely supported by the state by legislative appropriation,—no endowment, no income from any source aside from the state legislative appropriation. The state has already appropriated $80,000 for buildings and will appropriate more for other buildings later on, we believe, and has given $10,000 for maintenance annually and this winter will probably increase that to $17,000 as an annual maintenance. Of all these three types of schools, I believe the best one is the county school, such as they founded in the state of Wisconsin. The county school type makes it possible to do a great many kinds of work in the locality that it can not do over a whole congressional district or a whole state.

The establishment of agricultural high schools in Europe is carried to a far greater extent than in this country; they carry on many lines of agricultural work we have not dreamed of in America, and some of their methods, we are just beginning to learn, are applicable to our own country.

These agricultural schools are growing very rapidly; I have spoken of Georgia starting eleven; in Alabama there are nine; one for each congressional district. Now, other states are thinking of other plans, such as the establishment of agricultural schools in connection with high schools,—the paper read this evening referred to that type of school. Were the present high schools already running in our cities and villages to have an agricultural department added to them, to give a training in agriculture to the young people in this country, it could be done undoubtedly for a less cost, at a much less cost, than to establish agricultural schools independently.

In the state of Kansas, there are at present twenty-one county high schools maintained by the various counties and until the present year they have not taught one bit of agriculture. The farmers have established and maintained these schools by taxation of their own property and have been sending their own boys and girls to these high schools, to be educated to leave the farms.

And that is what we have been doing in all our high schools, all over this country, and we have been doing it in all of our rural schools throughout this country. I mean this: Our rural teachers are trained for their work of teaching in the cities and in the larger villages and have gotten their environment from the village; they have gotten their training from the village and the city; they go into the rural schools to teach the farmer boys and girls all the things they are to use in their life work. What will that teacher instill in the minds of those young people? Will it be country things, desires for rural things or desires for city things?

We know what the result is; we know how fast the young people have been leaving our farms; we know in the state of New York, to our sorrow, of many farms that have been abandoned,—if we dared to call them so, but there is such a strong prejudice in our state against the word abandoned we don't use it often,—and in New England I think there are such farms. The truth is this, our farm property is depreciating in value in many sections of America, because the boys and girls have been trained to leave the farms.

We must now begin to attend to this other side of the education of the young people, if we expect to continue the profession of agriculture as the chief profession in this country, as it should be. If agriculture is introduced into the country and city schools, that department can do a great deal for the people in the surrounding country. There were twenty-five different kinds of work that our school in Menomonie, Wisconsin, offered to do for the farmers in that vicinity,—direct help, not in the way of going and doing their work for them, but showing them how to do things in an up-to-date way, using scientific methods on their farms.

We have for several years, since 1887, been starting experiment stations in the different states and by the United States Government. At the present time we have fifty experiment stations, finding out new things to be applied to the farm. Now we are beginning to establish schools of agriculture that will teach these truths in a simple form so the farmer can use them. Perhaps the old farmers do not need that help and training, but the schools are to train the younger people in these new lines. Why? Because we are coming to the time when the young men without this special training in agriculture cannot compete with those who do have it. The experiment stations have been getting these things for us and placing them in form so that we may use them. We must now have schools of agriculture that will simplify that knowledge, put it in concrete form, so that the young boy from the country school can grasp that knowledge and make application of it to the farm upon which he is to live. There are many technical terms we may use in speaking of a certain plant or weed on a farm, but we want to use simple language. One of the greatest problems of the teacher in the agricultural school is to simplify the knowledge gained from the experiment station so it may be used by the boy on the farm. Instead of using scientific names of different things to the boys who come to our schools, we drop them and use the common terms, that mean much more to them and as much to anybody else. I believe that makes the work practical.

These schools, as they are now being established, are for the teaching of agriculture, manual training and domestic economy. We teach dairying, butter making, cheese making, the breeding and feeding of the horse, stock judging and all the different lines of animal husbandry are worked in. We teach veterinary science so that the boys may be able to take care of animals on the farm in case of emergency—in case you cannot get a veterinarian. The boys learn the testing of animals for tuberculosis. They go right out to the herd that some farmer wants to have tested, take the temperatures and keep the records, do the injecting and even kill the animals, where it is necessary to do so, or quarantine them. All this makes the work practical. Can a high school do that in the city? It surely can if you get a teacher who can handle the work along these lines, but that is a difficult problem.

The work of gardening is also taught; the matter of spreading of fertilizer; the handling of manures; everything that is needed in practical agriculture. We teach the new things in the agricultural schools that ought to be known and applied to farm work. It makes it possible to see how the farm can be made to pay better than it ever paid before. We do not teach young people to decry or look down upon the methods followed by their fathers and yet they can see which of those methods can be replaced by better ones. What will be the result? The boys will stay upon the farms and will not wish to go into other occupations. How many of these boys would have stayed upon the farm if they had not gone to agricultural schools? All the boys in our Wisconsin schools went back to the farms.

In the manual training work we teach carpentry; simple blacksmithing, not the more complex forms; the running of engines, gasolene and steam; the planning of farm buildings; rope splicing; and such things as are practical. We believe in the manual training work and hope to instill a love for it in the minds of the boys, so they will want to go back on the farm and have a little shop of their own, where they can keep all the farm tools in good order. On rainy days or cold days during the winter or any time when the hired men or themselves have nothing else to do, they can repair broken parts. The result will be the cost of education of the boys and all the time they spend at school will be abundantly paid for in the saving of farm machinery. We believe that a little paint shop, with which to keep the parts of machines well painted, will help solve the farm labor problem. I have known farmers to "lay off" farm help in the winter because there was nothing for them to do. Did you ever hear of such a case? When the spring came with its heavy work, then the men were not to be had.

In the domestic economy branch we teach the young women to be good housekeepers and home makers; they find pleasure in their work; they find profit in their work; they can see where the work of the home can be improved and simplified and not make it a long drudge from morning until night. Very often a farmer's wife works from very early in the morning to very late at night and I wonder she does not break down before she does. I do not mean to say we are training these young people not to work, because that is the thing every boy and girl is taught to do; trained how to do things with their hands and also taught how to save their hands and feet by their heads. The girls are taught how to cook a meal that is wholesome,—not one that cannot be digested; they are given training in sewing, the cutting of garments so as not to waste a la ge per cent. of the cloth; cutting their own garments and also garments for the rest of the family and there is no department in the school that is more popular than this. The young women are also trained in laundry work—that doesn't mean to scrub and scrub,—the other day a woman showed me a table-cloth which had some rust stains on it and which she said had been gotten on by the wash-woman and she complained that the wash-woman had a rusty boiler. One of the girls looked at it and said the stains were caused by the bluing and that if the woman had rinsed the clothes properly there would have been no rust stains on the linen. This illustration will show you how practical the teaching in this branch is. The domestic economy course is not a very long one; the work goes on through the two years in the New York school.

I believe a two-years' course in these lines of agriculture, domestic economy and manual training offered in our high schools would do a great deal towards keeping up interest in agricultural lines.

I wish to refer to the country schools. Also to the type of schools that are training teachers for rural schools. The county high schools established now in the state of Wisconsin, fourteen of them, are training teachers for the rural schools. Suppose this State had such a school in each county? Let the teachers come to those schools from the rural districts having had their training on the farms and then get their special training for teaching in the county schools for that particular purpose. The certificate would not be good in any but the rural schools; then they would go back and apply that knowledge they had acquired; they would give the young people a desire for rural life and keep them on the farm—it would do a great deal toward keeping them there, at least.

Now then, there is another thing that could be introduced in rural schools, besides teachers trained for this purpose. This other item is the introduction of practical lines of work in the subject matter. It doesn't mean to introduce agriculture as a new subject in these schools, but to introduce practical illustrations in agricultural lines in all the subjects; in the geography of your immediate surroundings; in the arithmetic, let the problems be practical farm problems. We have a class that studies one term on farm problems entirely, the cost of filling a silo, the cost of feeding a cow for a year, and the profit from the dairy herd, which cows are the most profitable, etc. Instead of these problems, what are the problems the arithmetic of today gives us? Problems from Wall street, the commission merchant, and all merchants in our cities and problems from all such sources. They are not farm problems, but they should be. I believe in all our English work, we should deal always with our farm surroundings instead of foreign things; I believe we should make the rural schools *rural* instead of city, and train our boys and girls to remain on the farm. (Slides.)

THURSDAY FORENOON SESSION, JANUARY 9.

"SANITARY MILK."

DR. L. P. SPRAGUE, BURLINGTON, VERMONT.

The word sanitary is defined as to pertaining to health, anything that produces or maintains health. Sanitary milk would therefore then be milk which is health giving and healthful. What then are the qualities of sanitary milk?

1. It must be produced from cows which are properly cared for and which are free from disease.
2. It must be handled in such a manner that it does not become contaminated with dirt or disease producing organisms, and does not contain an excessive number of bacteria of all kinds.
3. It must contain no preservative or other added substance.
4. It must be of good quality, this being the least important from a sanitary point of view as it makes little difference whether the milk contains three per cent. of fat or six per cent. To the consumer, however, this last is usually important.

Of the diseases of which the cow is heir to, I shall speak of only two—tuberculosis and mammities—and one physiological condition—that of milk produced by cows too near calving.

The question as to whether tuberculosis can be transferred through the milk from cows to man is one which we do not need to discuss. Experiments and clinical observations have established the fact that the disease is thus transmitted. That it is not necessary for the cow to have tuberculosis of the udder to thus spread the disease is shown by recent investigations of the Department of Agriculture. The cow coughs up the infectious material and instead of expectorating it, as does man, she swallows it and it thus passes out through the alimentary tract. We all know how frequently milk becomes soiled with small particles of faeces and thus the milk is infected. When we consider the number of cows here in Vermont which respond to the tuberculin test, seven hundred and seven during the past year, we see the great danger to which the public is exposed. That tubercle bacilli are not more often found in the laboratory examinations of milk is explained by the fact that the organisms are not in solution in the milk and thus spread evenly through it, but they are comparatively few in number and may not be in the particular sample at all; by the fact that they multiply slowly, if at all in milk, while the milk bacteria multiply very rapidly, and thus mask the presence of the tubercle bacilli and lastly, the laboratory technique for demonstrating tubercle bacilli in milk, is not yet perfected.

I, for one, would like to see a law passed by our legislature requiring all cattle in the State to be tested by the tuberculin test and every one which responds be killed. For it is only by radical methods that the disease will ever be wiped out of the State, and it is far safer to have a healthy cow condemned than it is to have a herd of diseased animals.

The second disease we consider is mammitis, inflammation of the udder, or garget. In the acute stages the milk is thick, stringy or lumpy, and loaded with pus cells, epithelial cells, granular debris and bacteria. During the latter stages, or when the disease has become chronic, the appearance of the milk may be normal, but the microscope shows it to contain quantities of pus cells and pus forming organisms, streptococci and staphlococci. Of course such milk should be condemned as unsanitary and unsafe for use. The difficulty here lies in the fact that leucocytes, which are the normal white cells of the blood, are found in considerable numbers in all milk, so that we must draw a numerical line between leucocytes and pus cells, pus cells being dead leucocytes. To explain, the leucocytes are the soldiers which guard the body against the invasion of disease producing bacteria. I injure my finger and allow streptococci to get into the wound. Immediately the leucocytes rush to the wound to kill the bacteria so that they will not infect the general system and thus result in blood poisoning. A part of the leucocytes are killed in the struggle and these, together with the broken down tissue, bacteria, and a few living leucocytes, are thrown off and make up the material we know as pus. It is this pus we find in milk drawn from cows suffering from mammitis. That there are a large number of leucocytes in normal milk is true and it is equally true that it is impossible to differentiate between these and pus cells, but as the question is now understood, it is safe to condemn all milk as unsanitary which contains five hundred thousand (500,000) or more leucocytes to the cubic centimeter, together with streptococci, this being the standard recommended by the American Public Health Association. The cow producing such milk may have no noticeable signs of disease, but she probably has some pocket in the udder which is still infected and causing pus in the milk. Many board of health laboratories are investigating this question, among those being the Laboratory of Hygiene at Burlington. Here we have the use of the experiment station herd which was kindly placed at our disposal by Prof. Beach. Our work with this herd, together with our observations of samples analyzed at the laboratory, have given us a clearer understanding of the subject. We are still working along this line and hope before long to report more definitely on our investigations.

That milk drawn from cows too near the calving period is unsafe to use is a well-known fact among dairymen. The colostrum consists microscopically of numerous free fat globules, and a large number of round or mulberry shaped cells, the colostrum bodies, that are filled with fat globules, epithelial cells and leucocytes. The chemical composition is also different from that of milk. Milk containing colostrum should always be condemned as unsanitary.

The question of handling milk is one of greatest importance, for careless handling will render the best of milk unfit for use. We would not think of drinking water which was drawn in a pail already contaminated with dirty water, handled by hands as dirty as the milkers' too frequently are; allowed to stand in the cow stable where it would collect dust, chaff, particles of faeces, hair and dirt of all sorts, so that when it was poured into a tumbler, a layer of sediment would collect on the bottom of the glass. Yet we drink milk of this kind and relish it, never stopping to think that it is far more dangerous than water handled under similar conditions, for the bacteria multiplies but slowly in water, while in milk they multiply with great rapidity, as it is an ideal medium for their growth. It is hard to convince the ordinary dairyman (or the consumer either for that matter) of the danger of drinking dirty milk, for he will tell you that he was brought up on it as were his father and grandfather and in fact the entire neighborhood. He forgets the diarrhael diseases which he had in his childhood, which his children, and those of his neighbors, have had, and of the infants which have died as the result of this dirty milk. It is stated on good authority that dirty milk is responsible for at least forty per cent. of the sickness and death of infants, the bacteria which are thus introduced into the milk being the chief cause of infantile diarrhael diseases.

Straining is not the remedy for dirty milk for this only removes the dirt which can be seen, leaving in the extract of manure, dust, etc., together with the bacteria. It is true that this is not as disgusting when placed on the table, but the danger is equally great. This dirt should not be allowed in the milk in the first place and here is a great problem, for the conditions of the stables and cows and the methods of handling the milk are not such on many Vermont farms as to allow the production of clean, sanitary milk. The stables in many cases are placed in the poorest part of the barn, that of the basement. The walls are of rough stone and wood, being covered about one-half way up with an incrustation of manure, chaff, dust, etc. The floor consists of uneven, more or less broken boards, and is covered with a mixture of manure, urine and litter. The ceiling is the floor of the loft where hay, straw and other kinds of fodder are stored. This fodder projects through the cracks, all being more or less covered by the dust and cobwebs. There are usually a few windows, but they have never been washed, and a ray of light has hard work to get through them. The only ventilation is had when the doors or manure holes are opened. Here is the filthy, foul smelling, dark place the cows are kept, never being cleaned off so that their hair is all standing out straight, except where it is curled by the lap of the tongue and on the flanks where it is encrusted with manure. The milk is frequently allowed to stand in the stable during milking, and often strained there as well. How can we expect to produce sanitary milk in such quarters? I do not mean to say that the stables on all Vermont farms are of the above description, for there are some which are above criticism and the cows are kept under sanitary and hygienic conditions. There are many more which are between these two conditions which need only a little extra care to make them sanitary.

The milk house is often simply a back room of the house, the walls, floor and ceiling being of such material that they can not be readily cleaned and which are not equipped with proper utensils for handling the milk nor with adequate appliances for washing and cleaning the same.

During the summer months, there is even greater danger, although the cows are out at pasture, and therefore keep cleaner. The great danger at this time is of not quickly and properly cooling the milk, so that the bacteria multiply in it enormously. It is a too common habit to strain the milk into a can which sets in the yard during milking and then placing the can into a tub of water after the milking is finished. Market milk should be strained then cooled at once to fifty degrees F., at which temperature the bacteria multiply very slowly, and kept there until it is delivered to the consumer. During these summer months the most scrupulous care must be taken to clean the utensils as the bacteria will collect and multiply in every little crevice and thus contaminate the milk which is put into them.

The preservatives which are more commonly used are formalin, boric acid, salicylic acid and benzoic acid. These are all poisons to the animal system and it is evident that milk cannot contain them and still be sanitary even though the quantity is very small. There are many of these in the market under the names of "preservaline", "freezine", etc. The agents and manufacturers claim that their products are absolutely harmless and that they cannot be detected in the laboratory. For instance, here is the claim of one: "It is not an adulterant. It immediately evaporates so that no trace of it can be found as soon as it has rendered all the bacteria inert. No chemical analysis can prove its presence in milk." However, they are all easy to detect, especially formalin, the one most commonly used and there is no poison which is not harmful.

The State Board of Health began investigating the milk supplies of the cities and towns of Vermont in the spring of 1906. Since then samples of milk have been collected, chiefly by the local health officers, and sent to the laboratory for analysis, and the results published in the quarterly bulletin issued by the Board of Health which, by the way, can be had by every voter in the State by simply sending a request for the same to Dr. H. D. Holton, Brattleboro, Vt. The following figures regarding the milk supplies are quoted from these bulletins. The bulletin issued June 1st, 1906, reported one hundred and forty (140) samples analyzed of which thirty-nine (39) per cent. met the Board of Health standard for sanitary milk. The December bulletin of 1906, gave the analysis of one hundred and eight (108) samples of which thirty-one (31) per cent. were sanitary. The bulletin of March 1, 1907, reported one hundred and thirty-three (133) samples analyzed of which twenty-six (26) per cent. were sanitary. The bulletin of June 1, 1907, reported two hundred and forty-seven (247) samples analyzed of which forty-two (42) per cent. were sanitary. The bulletin of September, 1907, reported ninety-one (91) samples of which sixty-one (61) per cent. were sanitary. The bulletin of December 1, 1907, reported one hundred and seventy-six samples (176) of which seventy-one (71) per cent. were sanitary. The above figures show an increase from twenty-six per cent. (26%) to seventy-one per cent. (71%) of the milk sold in Vermont which met the State Board of Health requirements. What, then, are the State Board of Health requirements for sanitary milk?

Chemically, it must contain not less than 11.75 per cent. of total solids, and not less than 8.5 per cent. solids, not fat, nor less than 3.25 per cent. of milk fat. It must contain no added water, preservative, or other substance.

Physically, it must be clean and free from all foreign material.

Microscopically, it shall be free from extraneous matter, pathogenic bacteria, as tubercle bacilli, and pus forming organisms, and shall not contain over five hundred thousand (500,000) leucocytes per cubic centimeter.

It is most unfortunate that the bacteria count may not be satisfactorily made and a standard adopted. The difficulty lies in getting the samples to the laboratory as they have to be shipped from all parts of the State, and it is thus from twelve to thirty-six hours after they are collected before they reach the laboratory. During this time, the bacteria multiply very rapidly so that it would be manifestly unfair to the producer to condemn his milk because of a high bacterial count. Packing the samples in ice and thus shipping them has been tried, but has proved unsatistactory. We can only judge of the bacteria by the sediment in he bottom of the jar, for if the milk is dirty the bacterial count must have been high before the milk was shipped. It does not follow that in clean milk the bacterial count was low, for it may not have been cooled and kept at a temperature of fifty degrees F. In Burlington where the samples can be analyzed at once, it is required that milk must not contain over one hundred thousand (100,000) bacteria per cubic centimeter. The milkmen have little trouble in keeping far below that limit even during the hot summer months. I believe there would be much less summer sickness if every city and town in the State could have milk of as low bacterial content.

That the above requirements are within the reach of every dairyman is shown by the fact that so many are meeting them, and that this number is constantly increasing as was shown by the figures already quoted. The chief difficulty has been dirty milk, although some have been condemned because of pus and streptococci, some because of being below the chemical standard and a few because of added water or preservatives.

Under the pure food law every sample which does not meet the requirements of the Board of Health is deemed to be adulterated and liable to be prosecuted. All cases of watered and preserved milk have been thus prosecuted and the dealers fined. It has not seemed best to prosecute because of dirty milk, dirt being less harmful than water, although warning notices have been sent in every instance. It seemed best to educate the farmer to produce sanitary milk rather than try to drive him to it; however, I can not say how much longer this policy will continue, for the milkmen have had nearly two years of warning notices and there are still about thirty per cent. (30%) of them producing and selling dirty milk. If the law is the only means by which these men can be made to produce sanitary milk, it is the duty of the

Board of Health to enforce the same. If the dealer dislikes to be prosecuted, and therefore, goes out of the milk business, so much the better for the community in which he has been peddling his disease-producing milk. There might be a shortage of milk in some quarters but I am sure that the seventy per cent. (70%) of milkmen who are producing sanitary milk would soon supply the need.

The Board of Health does not expect the farmer to build new buildings, to have high priced milk utensils, to wear sterile clothes while milking, to have a veterinarian always in attendance and other measures which are beyond the means of the ordinary farmer. They do expect and require that the cows shall be kept in clean, light, dry, well ventilated stables, where there is no accumulation or incrustation of manure and which are whitewashed as often as needed to keep them clean; that the cows shall be free from disease and in good healthy condition; that they be carded often enough to keep their coats free from dirt and manure and their flanks and udders be properly cleaned before milking; that they be bedded with sawdust, shavings or some other clean material; that the milker's hands and clothes be clean and that he milk in a cleanly manner; that the milk be removed at once from the stable, to a clean, dry room in which the air is pure and sweet, where it is strained, aerated and cooled to at least fifty degrees F. and kept there until delivered to the consumer; that all milk utensils be thoroughly cleansed and scalded with hot water or steam and kept where they will not become soiled until they are again used for milk purposes.

In closing let me say that any one who has studied the question of the production of sanitary milk, no matter how little, knows that it can not be produced today with the profit which the farmer has the right to expect, with milk at four, five or even six cents per quart. It is strange how everything else, meats, flour, sugar, butter, eggs, and all other food products advance in price and the consumer pay the increased cost with little grumbling, but when the price of milk is raised one cent per quart there is a great outcry. When we consider the amount of nourishment there is in a quart of milk, as compared with other food stuffs, we find that milk even at ten cents per quart is one of the cheapest foods we can buy. If the consumer would consider this as well as the danger of using unsanitary milk, the farmer would then get a higher price for his milk and there would be no excuse for his producing dirty, unsanitary milk.

"SCHOOLS AND EDUCATION."

MRS. LAURA B. CRAMPTON, RUTLAND, VERMONT.

Since Adam suffered a loss on that memorable day of long ago, woman has been looked upon at a side issue. If, however, one believes in evolution, as all progressive minds do, it must be conceded that man has been laboring under a delusion for many hundred years, for woman being the last creation, must be the highest type of perfection. That she is able to reach heights that only a few men attain is evident by the achievements of such women as Mary Lyon, Jane Adams, Maria Mitchell, Queen Victoria, Joan of Arc, Clara Barton and countless others.

In reading the statistics pertaining to our Vermont schools recently published, I find that in the State there are 334 men and 3650 women teachers, a proportion of nearly eleven women to one man. This being the case it follows that the youths of our State are under the tutelage of the women all of their early years. To urge mothers to co-operate with the teachers of our children is the object of this paper, and to take such a vital interest in the welfare of our schools as to insist upon having the best. We spend a vast amount of money upon our schools, and it should assure the best of buildings, equipments, text books, teachers and graduates. Our progressive citizens are exerting every effort to bring about the ideal in education, and they need the support of every man, woman and child in the State to accomplish results.

SUGGESTS WOMEN FOR SCHOOL BOARDS.

Politics has no place in school matters. The most efficient man for the office, irrespective of party, race, or color, should be the principle by which the board is elected. Deplorable as it sounds, we are told that every man has his price, but I have the courage to contradict the statement, and I believe there are good men and true, and I know of no better way than while we are waiting to find them, to put women on the school board. They have no political aspirations, are more conscientious than men, are more progressive, and know intuitively much more than man ever learns or is long in discovering. Some of the best schools with which I am acquainted have a mixed school board, and I at least recommend for it a trial.

Having expert superintendents is a grand stride to the betterment of our country schools. He brings ideas, enthusiasm, methods, and kindly criticism, all of which are to the advantage of all concerned. But all these changes will be of no avail without support from the mass, and here is where the co-operation of mother and teacher is of vital importance. I wish that they would unite so earnestly that mental arithmetic would be a requirement until it had been thoroughly mastered; the old fashioned Colburn's is not to be despised. I would suggest that geography have more of a place in the curriculum; one more year of arithmetic, perhaps one more advanced would do no harm; and spelling till the end, and I believe in some oral spelling. I am not conversant with the text books now used for the study language, but trust that it confines itself to the study of English, as she is written and spoken and does not have a smattering of zoology, botany and ornithology thrown in, as the last text book did with which I was acquainted.

One fault with our teachers is the lack of thoroughness. So much matter must be mastered in a given time and the completion of that matter is the paramount issue. Less matter and thorough understanding would be my theory. If it cannot be done in the time alloted, shorten the course. Too little attention is paid to elocution. So many teachers whose classes I have heard recite, let them simply pronounce the words with no idea of expression, enunciation, or meaning. One of the chief requisites of a successful teacher is insistence upon thorough understanding of the subject, enthusiasm in her work, and a fund of ideas to give variety in presenting facts. But she is not able to accomplish the best results unless supplemented by the home influence. The practice of too many parents of criticising the teacher adversely before their children is malicious. If you think the teacher at fault, investigate, and you will often have cause to change your mind. Be just to the teacher as well as the child.

How many of us enter a school room except on days of special exercises? What encouragement it would give teacher and pupils if we would step in two or three times a term unexpectedly. We parents are too prone to humor the child in non-attendance for paltry excuses. Nothing but the most urgent of reasons should detain a child at home, when school is in session. Insist upon punctuality and thus cultivate a habit that will be a blessing through life. Inculcate honesty of purpose in all that is attempted. Patriotism is taught everywhere by use of flags, and songs and recitations on anniversaries; let us as parents unite with the teacher in teaching honest patriotism by example as well as precept.

We parents fail again in allowing our children to grow up so utterly irresponsible. Every wish, every desire, every inclination is pampered, utterly regardless of duty, and oftentimes of health and propriety. Every child should have some one duty in the home for which he is responsible, and its performance demanded. That will simplify matters when he is old and it becomes necessary to decide what aim in life is most to be sought for. And that an aim is imperative should be instilled into both our boys and girls. Then follow persistence in reaching the goal set before them. Let them take time in choosing, and it is usually best to let them make the choice, though teacher and parent can advise and show the pros and cons, but after the choice is made persevere and conquer. The time is fast waning when our daughters live an aimless and drawling existence, and as they become the mothers of the day and in the light of their experience see the wisdom and necessity of untied effort, the little leaven will have leavened the whole lump, and we will have higher ideals, happier homes, fewer divorces, better citizens and a purer atmosphere.

Why this hue and cry about the boy who leaves the farm? We hear nothing about the boy who does not become a minister, because his father is one; and there is a dearth of first-class ministers. If the son of a merchant wishes to be a lawyer, no remarks are made; a doctor's son is not necessarily elected to be a doctor; why then is it such a calamity when a farmer's boy, who has no taste for the farm, cares nothing for animals, and is fond of machinery, should become a mechanic or a draughtsman? If he likes the farm he will choose the farm sooner or later, so let him make his choice and not make a discontented, unhappy third rate farmer out of a first-class botanist.

President Morse introduced Mr. W. W. Hall, President of the New York Dairymen's Association and connected with the department of dairy industries at Cornell University, Ithaca, New York, and requested him to address the meeting. In an informal manner Mr. Hall responded as follows:—

Mr. Chairman:—I thank you for an opportunity to say a word to the members of your Association. I came to learn all I can of your methods and of the improvements which you have made in the manner of conducting your annual meetings since I visited you the last time. My object is to be able to return to our own state and advise the officers of our Association to incorporate with our methods, those which you have adopted and that have been beneficial to your dairy industry. The dairymen of the Empire State extend greetings to the dairymen of the

Green Mountain State. If I have any criticisms to make of your methods, it is that you should shorten your program or extend your time. It is of vital importance that a reasonable time be given to discuss the subjects which are presented by the persons whose names appear on the program, as there are always many who sit in your audience who are quite as familiar with the subject which is being presented as is the one who is presenting it, and by a full and free discussion valuable information is brought out and will make clear the full meaning of the address to those who are less well informed. The discussion of the last paper, which was stopped for lack of time, is one of vital importance to all of us, both producer and consumer, and when the question of sanitary milk for domestic purposes is settled and the producers are prepared to comply with the requirements of the city Board of Health, it will be much easier for the manufacturers of dairy products to secure clean and wholesome milk for production of butter and cheese.

We should give the consumers of raw milk and cream and of dairy products, generally, full information as to the careless methods which are being practised by dairymen, and when they see the demand gradually decreasing, they will be quick to make amends. We have been too careful about permitting the truth to be known as to the unsanitary conditions of our barns and cheese and butter factories. Such methods have given all manufacturers of good products an opportunity to practice adulterations which should never have been permitted. We have lived to see a National Pure Food and Drug law rigidly enforced, and with one exception, the manufacturers of butter and cheese colors have complied, and it is to be hoped that the poisonous analine compounds have had their day. The milk dealers of New York City are making inroads with our cheese and butter sections and, as many of you know, a train leaves Messina and the St. Lawrence river every morning for New York City, for a distance of four hundred miles. You say we must keep our milk on the farms and make it into butter and cheese, so as to keep up soil fertility. If a demand for raw milk and cream is strong enough and they are willing to pay the price, what are we going to do about it? Is it not better to sell the milk if larger returns can be made, than it is to cheapen our dairy products by our loading butter with water or making skim cheese and placing such products on the market not properly branded? The ruling which has been made by the Department at Washington, as they construe the Pure Food law, that a cheese is an article of food which is made from pure unadulterated milk and any substance that is made from milk when any part of the fat has been removed or if any foreign substance has been added, is an imitation and must be branded to distinguish it from the genuine article. The tendency in our State is to cheapen our own product that the manufacturer can compete with the city trade for raw milk and cream. This has a tendency to injure our reputation for producing honest goods and in the end it will be unprofitable. The gentleman who spoke on the subject of cheese making gave a very excellent paper, but the time being precious, one very important question in connection with his address was not fully discussed. A gentleman asked if it was profitable for milk rich in fat to be made into cheese or would not a large part of the fat be lost in the process of making. I think I am safe in saying that if the milk is pure and sweet and a portion of the constituents of which are not broken down, destroyed and converted into a by-product, thus setting the fat free and permitting it to escape, that no greater loss will be suffered when making from milk rich in fat than when made from milk less rich in fat. I have excellent opportunities to make careful tests of this and I have had results which satisfy me that the per cent. of fat in milk is no objection, no matter how great, if sanitary conditions are what they should be after the milk is drawn from the udder, but the sooner it reaches the cheese maker the better for good results. It is quite as important to practice the same careful habits around the barn when the milk is to be made into cheese and butter as it is when it goes to the cities for domestic purposes. The yield alone will pay for the extra work, to say nothing of the improved quality. It is quite easy to carry the effort to an extreme to produce sterile milk and make the cost exceed the returns. Give us good, clean milk for butter and cheese and it is good enough for any child or for any invalid and is a safe and wholesome article of food.

"SOME DAIRY FARM PROBLEMS."

PROF. W. J. SPILLMAN, MANAGER OF FARM INVESTIGATIONS, U. S. DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.

Professor W. J. Spillman, Agriculturist in charge of Farm Management Investigations, U. S. Department of Agriculture, Washington, D. C., introduced by President Morse as being an "off-shoot of Secretary Wilson, the grandest man we have in the country".

Ladies and Gentlemen:—I don't know what to do on this occasion. It is a physical impossibility for me to make an address on a farm subject within less than an hour. It is now 40 minutes to 12 o'clock and another man is supposed to speak after I finish. I am reminded of an Irishman who pointed out to a friend, who had but just arrived in America, an eight-day clock, explaining to him that it run eight days without winding,—"An' begorra," replied Pat, "how long would she run if you wound her?" Now, I am wound up like an eight day clock and I can't unwind in less than an hour and if I am wound up tight it takes two hours to unwind.

I came to Washington just six years ago this month, and was given charge of an office with the title of "Agrostologist". I looked in all the English dictionaries to find out what the word meant and I couldn't find it. I thought it was Latin or Greek and so I looked through the dictionaries of those languages and found it in the Greek dictionary. I learned that the first part is from "agrostis," which means grass, and that applied to a dry fellow like me means hay, of course. The last part is the word "gist," which is a synonym of the word "epitome;" now botanists tell us that the seed of a plant is the epitome of the whole plant,—so, you see, the whole word means "hayseed"—and I was the official hayseed of the department.

After I found out what the word meant I was more contented, although I always had to explain it to my friends, and the newspaper men always got it "astrologist." I began at once to try to get this name changed, and finally succeeded in getting the title agriculturist.

Agriculturist! Do you know just what that is? Down our way he is known as a "farmer who farms with his mouth". That fits me very well. It has another meaning, however; it means a man who studies agriculture. I happen to belong to that group of men also, so I think the title fits me well.

I have been greatly interested in another thing. I have traveled over Vermont, Maine, Massachusetts, New Hampshire, New York, and all the other states in the Union, and I find in the State of Vermont some farmers who are doing what I call high class farming, making land return an income of from $50 to $100 an acre. The thing that interested me particularly was that all these men who are doing that kind of work are agriculturists; they are students of agriculture; they are just as familiar with the bulletins and agricultural papers, or more so, than I am. I have yet to find the man running a farm and getting $50 an acre out of his land that is not thoroughly posted in the literature of agriculture.

I used to be a professor of agriculture in the State of Washington—held that position seven and a half years. When I first went there I was new to that country; I arranged a number of experiments on the farm belonging to the college, with a view to finding out what I didn't know about farming in that section; we had 190 acres in the farm and I soon found out it was entirely too small,—it wouldn't hold the experiments I wanted to conduct. We put in all we had money and land for. Then as time went on I began to have the privilege of getting in touch with the farmers of that state, who had been there some thirty years longer than I had. Here is the interesting situation which I found: Many of the farmers there already knew half of the very things I was trying to find out. Then it dawned upon me if I could just go out and stay among those farmers a few months every year and pick up the knowledge which they had gleaned, and which no one was making a record of, and which was gradually going to the grave with the gray headed men and not benefitting the human race at all;—if I could go out amongst men of that kind and pick up the information which they had gained, I could advance very rapidly in my knowledge of farming. When I came to Washington city I expected to find a pile of instructions that would take me six months to look through. After I had been there a few days—I hadn't any instructions at all—I went to the chief of the bureau and secretary and suggested that I was ready to receive any instructions they had for me. Secretary Wilson looked over his glasses in his kindly manner and said, "Spillman, we brought you here because we thought maybe you wouldn't need any instructions." I said, "Does that mean, Mr. Secretary, that I am free here to develop a policy of my own?" "That is exactly what it means," he said, "the only instructions we ever give here is to get results that are of value to the American farmers. Here is the money to do it with." That is the only instruction I have ever had from the Secretary of Agriculture. It took me six months to realize that I was a free man, that I had the privilege of doing that thing I had so long wanted to do: hunt up the successful farmers, gather up their experience and add that information to the science of agriculture. As soon as I realized that, I started out. I well remember the first farmer I interviewed, a Mr. Chester of Champaign, Illinois. I said, "Mr. Chester, I have started out to study the work of successful farmers in this country; your name has been given me as being a very successful farmer. I want to know something about your crops, your land, your stock; what stock you keep and why you keep it." He looked at me a few seconds and asked this question: "Mr. Spillman, what do you mean by a successful farmer?" I said, "I mean a farmer who maintains the fertility of his soil or builds it up and at the same time makes at least sufficient money out of his business so that he and his may enjoy the comforts of life and lay by a little for the future." I remember his reply as well as though he made it yesterday: "Well, that will do. There are two kinds of farmers around here that call themselves successful. One of them is growing corn and selling it, on land that other men made rich; they are making money and they call themselves successful farmers, but they are ruining good farms. Then there are a few others, like myself, who are content with smaller income just now, who are keeping up and adding to the fertility of their land and making a good living for themselves, leaving the land richer than they found it."

When I was a small boy in southwestern Missouri I used to hear this story. A gentleman was traveling through the hilly country of Southern Missouri or Northern Arkansas and stopped at a log cabin to inquire the way to the nearest village. A woman came out of the cabin, surrounded by a tribe of children—a traveler is quite a curiosity in that country and the whole family always comes out to look at one. In answer to the man's inquiry the woman said, "Yes, stranger, I can tell you where to go. You go down this road until you come to the old blue hen's nest and then you take the right hand road." "Madam," the traveler replied, "I don't know where the blue hen's nest is." "Why, the idea," she said, "the smallest young one on this place knows where that old hen's nest is." Now, Vermonters will, of course, not expect me to know where the blue hen's nest is in this State, because I don't travel enough in Vermont to know, so what I say, therefore, will be more or less general, yet applicable to Vermont, otherwise I should not say it.

Some problems of the dairy farm is the subject upon which I am to speak. The first of these I want to mention, is the price of feed for dairy cows. That has become a very serious problem. I remember very well when millions of bushels of bran were sold at $4.00 a ton and Pillsbury had so much of it he had to hire it dumped into the Mississippi river; there was so much of it the fish commissioners got after him for polluting the water and injuring the fish. In these days, the fish commissioners are not troubled in that manner. In regard to other grain products. I can remember when cotton seed meal sold for $8.00 to $10.00 a ton. I don't know what it is now, it is too rich for me to buy. Linseed oil meal sold for $11.00 and $12.00 a ton then.

Let me tell you the principle that fixes the price of these things. We are taught in our books that supply and demand determines the price. There never was a greater falsehood taught. It is not true. Here is the principle that operates to fix the prices of these by-products. The price goes up, up, up gradually until the men who have the products for sale, find out the highest prices at which they can be sold, and there the prices stay and always will stay. Where are you going to get relief? I don't know what you are paying here for grain, say $32.00 a ton for an average (voice: that's about right). When you pay $32.00 a ton and feed 10 pounds of that a day, as some men are doing, to cows giving 3 to 3½ gallons of milk a day, you are feeding a good deal of money, and you are not making the profit you used to make when meal could be bought for $12.00 or $15.00 a ton. I don't expect to see any improvement in this matter. I don't think either, that we are going to pay a higher price; if we do, dairymen will have to go out of business. The men who control these things in this country get the price of feeding stuffs to the highest point they will move. If you dairymen would absolutely refuse to buy cotton seed meal at a price above $20.00 a ton, you would get it at that price. Are you going to do that? No. So I expect to see it sold around $32.00 a ton from now on. What is the remedy? In some places there isn't any. In other places there is a remedy. On some farms in Vermont there is a remedy; on other farms there isn't. Where a man can grow a balanced ration on his own farm, there is a remedy. That is the only one I have to recommend. Where a man can grow corn and oats and clover and alfalfa, that man has the remedy. With these crops you can make very good rations for the dairy cow.

The office which I represent is called the office of farm management, and our business is to investigate the methods used on the good farms of this country, and give to the people the results of our investigations. We have one representative of that office with us here, (Mr. Dodge), whose territory is New York and New England. He is giving special attention to this question of the cropping system for dairy farms here in New England. He has something worth while to tell you men, about what you can grow here. He has learned this by seeing what is grown on the successfully conducted farms in Vermont, New Hampshire, Maine, and the other New England states.

Another question which is about as serious, if not more so, is the question of farm labor. That question confronts the farmers today all over the United States. Do you know that even out in Kansas the scarcity of farm labor is a source of worry to the farmers, just as it is to you here. I was in the state of Washington the other day, attending the meeting of their dairymen and that question of farm labor was one of the principal topics of discussion. They are paying $40.00 a month for farm labor and can't get it at that price. You ask what the difficulty is? I am going to tell you. In the first place, there has been an unprecedented development of manufacturing and transportation enterprises that have absorbed the available material for labor in the country. Here is another thing, a thing I regret, I think it is wrong: We have been going through an era when it was considered moral and right for a business man to make 500 per cent. profit on his business. I consider that an unpatriotic thing to do. We have been going through an era of profits that are unreasonably high, immorally high. The result is, men who make one hundred per cent. profit in their business could afford to pay the highest wages. Wages of laboring men in this country, before the panic of last fall, had reached the point that was never known in the history of this or any other country before. The farmers could not meet these conditions because they are not making a profit of 100 per cent. in their business; they hadn't the profit and they couldn't pay the highest wages. That is one trouble. It begins to look as though the farmer has got to pay the prices that other people pay for labor. This panic has made the situation a little easier, but it has not relieved it permanently. It will be easier for a few years, but manufacturing and other enterprises will again absorb the supply of labor and leave the farmer just as he was six months ago. I have told you one way by which you can avoid paying the high price of grain,—raise it on your own farm. There is but one way in which you can get around the scarcity of labor on your farm—you all know the method. You never saw a farming communtiy that was abundantly supplied with farm labor but that the labor was supplied from the families of the farmers themselves. That was the case when I was a boy; there were only fifteen of us children, and we usually had enough farm labor, such as it was. My father never worried much about that subject. That is the only remedy, I have said, but after you raise these children on the farm what happens to them? The first time I came to New England, Mr. Dodge had selected a few good farms in Vermont, New Hampshire and Maine for me to see. I visited these farms,—the farm of your honorable Secretary (Davis) was one of the number—and I saw some of the best farming operations I have ever seen; I was enormously gratified, but on that trip I never saw a man between the ages of 15 and 40 on a farm, not one. I was rather surprised when I came into this convention to find half a dozen men in attendance under 40, who hadn't gone to the city. Here is the point. Our young folks go to the city,—tell me why. You know as well as I that they do so because they think they can do better there than on the farm. Can they? That is the question. Do you know what we teach our children in the public schools? I was interested in the paper read by the lady preceding me, in which she advocated the getting of city teachers for country schools. That is what we have been getting ever since I was a child; teachers who knew absolutely nothing about the country, and who turned the minds of the children to the city. That has been done in the public schools ever since I can remember. That was done to me, and that is why I am not on a farm today. I never had a teacher mention a farm subject to me when I was a child; one of my teachers was a graduate of Yale University, who taught in the back woods of Missouri, 90 miles from a railroad in the Ozark Mountains. Did he teach me farming? No. The trouble has been in the school system.

I want to talk to you about the school system for a few minutes; that is one of the things that makes farm labor scarce in Vermont today; that makes the average farmer in the United States grow 23 bushels of corn to the acre, worth $9.20, at cost of $12.00; that is the thing that makes the average farmer grow 13 bushels of wheat costing $9.10 to grow it and selling for $9.10; that is the thing that makes the cotton grower grow cotton to sell at $16.75, costing $17.00 an acre to grow it.

Our public schools. We prate about the dignity of labor, but every minute that the child spends in most of our schools, either in the city or country, he is taught to despise labor and laborers (voices: "that is right."). If we had tried to devise a system of education intended to train our children away from all occupations that have any labor in them, we couldn't have succeeded better than simply to adopt what we have got just now. Do you know where our system of education came from? Let's go back 2,000 years in old Greece. No one except the children of the leisure classes was entitled to an education. Of what did education consist then? Mathemetics, music, oratory,—the classics; they were manufacturing classics in those days; they also had others that had been manufactured before. What was it for? To enable children of the leisure classes to shine in society. Now, when education became common in England, 300 years ago, they simply adopted bodily the curriculum the old Greeks had used, and so they made mathematics, Latin and Greek, history and oratory the foundation of their system. Who got that education? The children of the leisure class, all that type of people who ride on other people's backs. And it was intended to fit them for riding on other people's backs. Now, we too, adopted that system bodily in this country, the same subject matter, and until we started our agricultural colleges in 1862, we made no fundamental modification in that system of education, and generally speaking, there has been no fundamental modification of the system of education used in our common schools. But we have some good schools, such as Dr. Davis told us about last evening (School of Agriculture, Canton, N. Y.) and we are going to have more as time goes on, and as the result of the grand work that has been done by the agricultural colleges of this country.

Now, let us go to our cities for just a moment and see what our system of education there is. We have eight lower grades, with a curriculum laid out for what purpose? Let us consider the students there. Of the students in these eight lower grades two per cent. are in the eighth grade and ninety-eight per cent. in the lower grades. Of the graduates in those eight grades ninety-two per cent. of them make their living with their hands. Yet in looking at the course of study in those eight grades, what is it for? Two per cent. of the children go into the high school, the others don't. The two per cent. get all the consideration; the ninety-two per cent. of the whole eight grades that are going to make their living with their hands never get a moment's consideration. We give the consideration to those who are getting ready to enter the high school and not a moment's consideration to those who are going to carry the manual labor of the country. Well, go on to the high school, what have we there? Of the children in the high school fifteen per cent. of them are in the fourth year of the high school; I don't remember the exact figures, but about seven or eight per cent. of the students in the high school go into the different colleges. In laying out the course of study for the high school, do you hear anything said then about making that course of study valuable to the nine-two or ninety-three per cent. who are not going to college? I have had a good deal to do on boards connected with schools, and I never heard anybody mention those ninety-two or ninety-three fellows out of the one hundred. The course is laid out for those seven or eight going to college, to fit them for that.

Then what is the college for? The high school graduates go on into our universities and colleges, they become lawyers, doctors, editors, preachers and teachers, and they have been doing that at such a rate that those professions are vastly overcrowded. That is the function of the college, I agree to that, and this system of ours has unwittingly been a splendid means of training men for the learned professions, but that is all. We went down South, where we have eight million poor, helpless, ignorant negroes who knew little or nothing about earning a living. We Northern people in our generosity have planted negro colleges all over the South and in those colleges we are teaching Latin, Greek and mathematics; we are teaching the negro how to ride upon other people's backs. Do you know what we are doing? We are ruining the negro race with our philantropy.

The negro race, just like the white race, needs to be taught how to apply their share of the force that must be applied to the plow of progress. That is what they need to be taught. That is what your children need to be taught, and that is what my boy needs to be taught and what I want him taught,—to take up his end of the burden and carry it.

Our little country schools are ordinarily considered very poor, compared with the magnificent schools in the city. And they are, but here is one thing that always puzzled me, when the schools of the country and those of the city are compared, that 70 per cent. of the leaders in every line of endeavor in this country comes from the country schools; 70 per cent. of the great railroad presidents were born and raised on a farm. It is because on the farm they were taught to do something, taught to assume responsibility, taught efficiency. What I want to see in our country schools, is advantage taken of the tremendous pedagogical value of farm work as a means of developing power in a boy; intellectual power, moral strength and character. It is the assumption and discharge of responsibility that develops character, as nothing else ever does, and on a farm you can put responsibilities on a boy. I have a boy 16 years of age—and unfortunately, because I am a poor man, he has been brought up in the city. I think as much of that boy as you do of yours,—and although he is but 16 years of age he is within half an inch as tall as I am, and feels much bigger—I realize in regard to his assuming responsibility, that that great strapping boy of mine is an infant. He does not know as much about discharging responsibility as I did when I was four years old,—and he is a brighter boy than I was. I have had no opportunity to put responsibility upon him. We live in a steam-heated flat in the city and there is absolutely not one thing about the house for him or me to do

To return to the country schools,—we employ teachers who know nothing about agriculture, and if they do, are ashamed to confess it, and they spend their time on problems that have nothing whatever to do with problems of the farm. I believe thoroughly in classical education, but the kind of education I most desire to see is the kind that fits the boy or girl for the posts of usefulness they are to occupy in after life. What I want to see, and am going to see, is good country schools based on agriculture as the theme. Professor L. H. Bailey said not long ago in an address, that agriculture should not be a particular subject of instruction in the rural schools below the high schools, but that agriculture should be as much a part of those schools as oxygen is a part of the air. It should all be based on agriculture, the grammar, the reading, the writing, the spelling, the geography, the arithmetic,—all based on agriculture and country life, and that is the way to teach agriculture in the lower grades in the country. We have the colleges whose functions it is to prepare leaders in agriculture. If the colleges were to furnish sufficient men to run the farms throughout the country, every agricultural college would have graduated 4,000 men every year. The business of the college is to make leaders, teachers, investigators, and it should be allowed to stick to its business. Now what do we want? We want a good system of agricultural high schools, based on agriculture, to take the boys and girls from the country schools and give them a country life education. The object is not to prepare them for college, but to make good farmers and farmers' wives out of them. That is what we need and that is what we are going to get in this country,—and then on top of this, incidentally, these high schools must prepare for college, for a few men are going on to the agricultural college where they are to be made into the leaders, to be in the forefront of things agricultural.

NOON ADJOURNMENT.

THURSDAY AFTERNOON SESSION.

"MOISTURE IN BUTTER."

PROF. C. L. BEACH, DEPT. OF DAIRY HUSBANDMEN, AGRICULURAL COLLEGE, BURLINGTON, VERMONT.

Butter consists of fat, casein, salt and water; the last three constituents constituting the overrun. In ordinary butter, salt may vary from 1 to 3½ per cent.; casein from 1 to 1½ per cent.; and water from 10 to 16 per cent. When the cream is very sour and the butter washed lightly, the casein may run as high as 3 per cent. Extra dry butter may contain less than 10 per cent. of water, in some cases the water content may exceed the legal limit reaching 20 per cent., and in exceptional instances as the result of manipulation, the moisture may reach 30 or even 40 per cent. water, therefore, is the most variable constituent in butter. The ability to control the moisture content is an interesting and important subject. When, from lack of knowledge, butter is made unnecessarily dry, the overrun is lowered and profits decreased. On the other hand an excess of moisture above legal limits renders the butter maker liable for fines and penalties.

INCREASE IN WATER CONTENT OF AMERICAN BUTTER.

There is no doubt that the discovery and discussion of methods of control of moisture has resulted in recent years in a gradual increase in the water content of butter. Dr. Benno Martiny of Berlin, published in 1900 a compilation of the water content of butter of several counties covering analysis made from 1868 to 1898. Connecticut creamery butter had an average water content of 10.08 per cent., dairies, 10.87; Massachusetts, 10.97; Vermont, 12.35; Wisconsin, 12.77; Wisconsin, Illinois and Minnesota, 11.83; Chicago market samples, 11.57; United States Experiment Station, 11.53; Canada, 9.80 per cent. The general average was 11.30 per cent. In 1902, 802 samples of creamery butter collected by the Department of

Agriculture averaged 11.78 moisture. In the same year, 102 samples of Canadian butter averaged 12.31 per cent. In 1907, 658 lots of creamery butter competing in the Wisconsin educational contest averaged 13.56 per cent. moisture. Here is an apparent increase of 2¼ per cent. in the moisture content of American butter in a period of ten years. In 1906, 2,786 samples of Danish butter averaged 14.29 per cent. moisture and the general average for the three preceding years was 14.25 per cent.

LEGAL BUTTER.

The Oleomargarine law of May 9 1902, provides that butter containing an abnormal quantity of water is classed as adulterated butter. A tax of ten cents a pound was levied upon the manufacturer and certain special taxes upon the manufacturer, wholesale and retail dealer. Under this law the Internal Revenue Department has held that butter containing more than 16 per cent. moisture is taxable as adulterated butter.

The act of March 3, 1903, authorized the Secretary of Agriculture to establish standards of purity of food products and to determine what are regarded as adulterations therein. Under this act, a minimum fat content for butter was fixed at 82½ per cent. The conflict between the maximum water limit and the minimum fat limit has been the subject of much discussion. While no official ruling has been declared, at present no prosecutions are made where the butter contains 80 per cent. fat and less than 16 per cent. moisture.

PER CENT. OF WATER AND QUALITY.

The 802 samples collected in 1902, by the Department of Agriculture ranged from 7.2 to 17.6 per cent. moisture. 20 samples from the five creameries having the highest score averaged 11.03 per cent. water and 20 samples from the five creameries having the lowest score was 10.6 per cent. In the September scoring, 8 tubs marked as having too much moisture averaged 12.67 per cent. water. Two packages marked full of water averaged from 11.11 per cent., and two marked "worked too dry" averaged 12.27 per cent. Commenting upon these scores, Mayor Alvord says:—"These results show the impossibility of forming an accurate opinion as to the actual water content of butter from its appearance alone, even when examined closely by a keen observer."

One hundred and twenty-five samples of Iowa creamery butter (Bulletin 80), containing less than 13 per cent. moisture, scored 91.87 and 95 samples containing more than 13 per cent. water scored 92.08; 43 samples of Iowa butter (reported by Bower), containing lessthan 13 per cent. water scored 91.04 and 64 samples containing more than 13 per cent. moisture scored 91.0.

Danish butter outranks American butter in the English market and likewise contains more moisture. One of our expert butter judges maintains that butter containing 18 per cent. moisture is more spreadable, if I may coin a word, other things being equal, than butter that contains less. The point which I wish to make is, that within the limits set by legal enactments, the quality of butter is not affected by the water content, unless unusual methods are resorted to for the purpose of increasing the moisture.

CONTROL OF MOISTURE.

The conditions which control the presence of more or less water in butter are not fully understood, at least by the writer. The size, shape and physical condition of the butter granules is an important factor. Butter-fat in milk and cream exists in the form of minute globules. During the act of churning these globules coalesce, forming larger and larger masses until visible to the naked eye. The granules do not entirely lose their identity even in the finished butter. Water is held in butter in two ways, first by capillary attraction, a film surrounding each granule, and second, in intergranular spaces or pockets. The smaller the granules at the end of churning, the greater the aggregate surface and the larger the amount of water in capillary form, but on the contrary, the larger and more irregular the granules, the greater the capacity of butter for holding water in intergranular spaces or pockets.

Experience seems to indicate that a very rich cream, that has not been chilled, churned at a high temperature, the churn filled to full capacity, will bring the butter in large flaky granules containing an extra amount of water. If the butter is over-churned in the buttermilk into coarser granules or lumps, or if churned in warm wash water, the conditions favorable to an excess of water are still further increased. In addition, the method and amount of working effects the moisture content. Butter worked twice, with a considerable interval between the workings, will contain less moisture than when the working is completed at one operation. When the dry system of working is followed, the less the amount of working the greater the moisture in the finished product. When butter is worked in the presence of water, there is a loss of moisture with limited working, but a rapid increase in moisture content when the working is continued to excess.

The breed, the feed, the period of lactation of the cow, the season of the year, may diminish or intensify the effect of any or all these conditions.

The buttermaker should bear in mind, however, that the conditions favoring an increase in the water content of butter are in apparent conflict with the modern teachings of buttermaking. A very rich cream does not churn evenly. Churning at a high temperature, especially when the cream has not previously been cooled, induces quick churning, greater loss of fat, a cloudy brine indicating excess of buttermilk and a poor body in the butter. The use of warm wash-water tends toward the production of a greasy butter. Over-churning in the buttermilk tends toward the incorporation of an excess of casein. Over-churning in the wash water is attended with a loss of aroma. Over-churning either in the wash water or buttermilk makes it more difficult to evenly distribute the salt. Light working is attended with a liability to mottles, and when the butter is not properly compacted, to a leaky texture. Excessive over-churning in the presence of water tends to the destruction of the grain, loss of aroma and the production of adulterated butter.

From unpublished data of the Vermont Experiment Station, the effect of manipulation on the quality of the butter is shown. Samples of butter from ten churnings were withdrawn when the butter was in the granular form and after intervals of ten minutes, fifteen minutes and twenty minutes of churning in the wash water. The finished product, taken from the churn when the butter was in the granular form, contained on the average 12.44 per cent. water and scored 95.1. After ten minutes of over-churning in the wash water, the per cent. of moisture in the finished butter was 15.03 and the score 93.9. After fifteen minutes of over-churning, the per cent. of moisture was 17.44 and the score 92.4. After twenty minutes of over-churning, the per cent. of moisture was 18.81 and the score 93.1. Here is loss of two points in the score and an increase of 6.4 per cent. of moisture. All the butter would have been ranked as extras.

To summarize briefly: (1). The water content of American butter has been increased 2 per cent. or more in the last decade, but on the average it is at least 1 per cent. below Danish butter at the present time. (2). The maximum legal limit is 16 per cent. moisture. (3). That in fresh samples there may be a wide variation in the water of butters classed as extras. (4). That the methods of increasing the water content are in conflict with the teachings and practice of the best butter makers for producing a product of the best keeping quality. (5). That over-churning in the wash water is attended with loss of aroma. (6). The water content of butter is the most variable constituent and in some cases a low overrun is due to the production of an unnecessarily dry butter. (7). That unintentionally the buttermaker may exceed the legal limits for moisture and become liable for fines and penalties. (8). And finally that the conditions effecting the moisture content of butter are so numerous, conflicting and recessive in some cases, augmentative and cumulative in others, many of which are not under control of the butter-maker, that it is impossible to predict with any certainty the moisture content of the finished butter. The butter-maker, therefore, should possess and become familiar with one of the several water tests for butter in order that he may turn out a uniform and legal product.

OFFICIAL GRAVIMETER METHOD.

Draw 500 grams (1 pound) with butter trier or sampler from the tub or churning to be tested. Melt in a glass stoppered bottle at as low a temperature as possible. When melted shake vigorously until homogenous and until sufficiently solidified to prevent separation of water and fat. Weigh two grams into a flat bottomed nickel, aluminum or platinum dish 2½ inches in diameter and ½ inch in depth. Dry at temperature of boiling water until there is no further loss in weight. The difference in weights before and after heating represents the amount of water in the butter.

GRAY MOISTURE TEST.

Melt sample of butter in a mason jar at temperature of 100 degrees F. Stir with spoon until the butter is of the consistency of thick cream and no free water can be seen. Place a sheet of parchment paper on each pan of a Babcock cream scale and bring to an accurate balance. Weigh 10 grams of butter and transfer butter and parchment to the flask. Add 6cc. of amyl. reagent consisting of 5 parts of amyl acetate and 1 part amyl valinnate. Fill the condensing jacket with cold water, connect with flask and remove glass stopper. Heat over an alcohol lamp. The water is evaporated from the sample and condensed and trapped in the condensing jacket. The time required for driving off the water is from 5 to 8 minutes. Disconnect the flask, insert the glass stopper and invert. The water will flow into the graduated tube where it may be read directly in percentage when ten grams are used for sample.

IRISH WATER TEST.

Balance the evaporating cup and weigh into it 10 grams of sample. Evaporate the moisture by heating over flame of alcohol lamp, keeping the contents well agitated by shaking in a rotary motion until the bubbling and foaming has nearly stopped. The heating must not be done too rapidly or the fat may spatter out of the cup. The heating should not be so intense as to char the fat or casein. When all the moisture is drawn off, the residue should have a yellow or light brown color. The heating should be continued until there is no condensation on the mirror held above the cup. When cool, return cup to scale and weigh. The loss in weight may be read directly as percentage of moisture.

FARRINGTON OVEN.

The Farrington or Wisconsin high pressure oven is made of a heavy cast iron shell within which a smaller shell is bottled. A thermometer is attached to record the temperature. Heat is obtained from live steam under high pressure. The steam is taken from the boiler entering the oven at the top. The valve on the feed pipe should be left wide open. The valve on the lower side should be open sufficiently to take care of the condensation. Ten, twenty-five or fifty grams of butter are weighed into an aluminum dish three inches in diameter and placed in the oven until it becomes of a brownish color. If the boiler pressure is sufficient to give a high temperature and the layer of butter is thin, it will take only about half an hour to expel the moisture. The loss in weight represents the loss in moisture. The advantage of the Farrington oven is that a number of samples may be evaporated at the same time, and there is no danger from loss of spattering or overheating.

"IN THE HOUSE ON THE FARM."

MRS. A. M. VAUGHAN, RANDOLPH, VERMONT.

If pure air is the inheritance of any people it is the birth right of country people, it is to be had in abundance, priceless and unadulterated; yet within the majority of our country houses we find men, women and children breathing a foul atmosphere simply because they will not open up the doors and windows, which in most farm houses are the only avenues of ventilation. Many persons seem to think that fresh air causes colds, when as a matter of fact the constant breathing of pure air is one of the preventatives of colds. The old fashioned fire-place was a boon to health, but the modern air tight farm houses, fitted up with stoves and kerosene lamps to consume oxygen is a very good place in which to rear sensitive house-plant children instead of the hardy stock which Vermont sent out a generation ago. In the farm house where there are no modern methods of ventilation it requires constant care and forethought on the part of the house-wife to keep the air pure. It is just as important that the family should have pure air to breathe as that the food should be wholesome, yet we throw open a door for five minutes and call that sufficient for twenty-four hours. Go home and devise some method of letting the out-of-doors into the house. Let some window near the living room be open at top and bottom, that the inflow of pure air and the outflow of impure may be as unceasing as the inhaling and exhaling of breath. Not long ago I called at a farm house where only one fire was kept during the winter months. The mother and two small children with grandfather and grandmother spent their waking hours in this one room. The room contained the essentials of kitchen, dining-room and living room, besides having two windows, which were completely filled with geraniums and other flowering plants. Far be it from me to discourage the love of the beautiful in house plants, for they are in a measure beneficial, but it isn't fair to give window gardens the sunshine and light that belongs to the children. These people did not open doors and windows because it let in the cold and thereby more fuel was consumed, but the grandmother was wondering why the children caught cold easily. Therefore, use more fuel, have more air and thereby save the doctor's bill. To maintain pure air great care should be taken to have nothing unclean in the cellar or about the premises.

The farm house in one of its aspects is a work shop. Within it there should be a place for everything essential to the feeding and clothing of the family. When we begin to eliminate some of the non-essentials from our houses we shall begin to get a glimpse of some of the essentials and our houses will present a less cluttered appearance. Under the disguise of beauty or under the bane of time-honored custom many things, in themselves a curse to humanity, find their way into our homes. Silver tea sets may be beautiful but the hours that we waste polishing them are golden; ruffles, tucks, laces and embroideries may be desirable when smoothed out by the flatiron, but we better be smoothing the wrinkles from the brow; lace curtains may give an appearance of luxury to our parlors, but we had better take them down and let in the sunshine, light and air that is our God-given heritage. What a blessing when the sunshine shows up the whatnot in its true light and it has been relegated to the attic, with its roaring sea shells and broken dishes. Perhaps then we may have room for a case of good books. When the sunlight has completely faded out the carpet and ruined it, then it is time to get a new hard wood floor. Bare floors are easily kept clean, while it is strictly impossible to keep carpets free from dust. Let us not be enticed into buying carpets and draperies when they are not indispensable, necessary or even desirable. Think out carefully what things are absolutely requisite for comfort and cleanliness and in buying new to the line. It is highly important that all furnishings should be substantial and useful.

In all this not one word against having things sweet and clean and orderly. One of the greatest helps in keeping the house and person clean is hot and cold water at sink, lavatory and bath tub. This is much better than a poor hired girl and costs less. Valuable time is saved by having faucets at the kitchen sink where both hot and cold water can be drawn, while the comfort and luxury a bath-room affords as years roll on is invaluable. Much better to spend earnings for such blessings than to wear out the women lugging water and then pay out the cash for doctor's bills.

If the Standard Oil Company continue; it is hoped that farm houses will speedily have new methods of lighting installed. The poor kerosene we get causes lamp chimneys to be blacker than ever this winter.

Now to my subject—three meals a day. Away with fancy foolishness and flummery; give us something to eat, plain, simple, clean and wholesome. Food is not tempting because it is fancy. The simplest meal may be a feast. On the farm we have good fresh materials with which to work and we can prepare dishes that the authors of the cook books don't know anything about; moreover we don't propose to waste time concocting some citified mixture when our family prefers a good johnny cake. One fact stands out by itself—no amount of reasoning that a fruit dish of fine flavored, highly colored Vermont apples is better for health and economy, both of time and money, than pie, can gainsay the fact that men will take the pie every time. Therefore, cook what your victims like. If they happen to like cracker and milk, so much the better, not only for the cook but for them. On the farm, where plenty of air and exercise provide healthy appetites, the necessity for anything but plain, nourishing food is entirely done away with.

The situation is similar with regard to clothing. Why live in the country unless we can enjoy some of its blessings? Why do we primp up every afternoon and thereby deprive ourselves of time in which to rest and read? The farm men don't put on ruffled shirts every day,—few stop long enough to shave once in seven days. It is a fact that women are the leisure class in this land of ours and how do they spend this valuable time? Too often doing embroidery that ceases to be ornamental as soon as it is out of style. Women do not realize the enormity of their mistake, when they spend time making fancy articles for church sales,—time that belongs rightfully to maintaining whole clothes, wholesome food and cleanliness for their families. Not long after the advent of the sewing machine it was as much work to do the family sewing as before, just that much more time must be consumed in extra trimming of each gown. Today we can select plain models if we will, we can wear neat seer-sucker house dresses and save ironing if we will. We can even use sheets, pillow cases, towels and clothing without touching a flatiron to them if we choose to do so.

Let us inculcate and encourage a taste for the plain, simple, modest manner of living, and why all this? That we may not be enslaved by our desires for fancy food and clothing, by longings for elaborate house furnishings that only weigh us down with care. The simple, homely dwelling where harmony, health and happiness abide may yet become artistic. The den for quiet thought and rest that puts in tune the disordered mind and body is displacing the spare chamber where no one has slept since Aunt Mary died, with the dozens of portraits of the dear departed gazing from the walls and whispering to lull to sleep the chance visitor. The new guest chamber has only the essentials of comfort and cleanliness and fresh air. The guest is welcomed to a home where his coming does not upset the ordinary routine of affairs. He is not made to feel that the whole mechanism of the home is changed on account of his presence; what is good enough for the family is good enough for the guest. True hospitality is simply sharing what you have, not giving to others better than you can afford for yourself.

Here perhaps there may be a chance for the city boarder. If funds are short and health is abundant, city boarders furnish a good home market for fruits and vegetables. There is only one type of city boarders that can well be admitted to a farm home. Hotels and summer boarding houses furnish ample accommodation for all others. The city boarder who comes as a friend and guest, expecting to pay seven or eight dollars a week and to put up with things just as they are, is desirable. For such individuals we provide plain food with plenty of fresh fruit, milk and vegetables; we do not attempt any elaborate service and all hands, including farm help and hired girls, sit at one table. Often such boarders make less trouble than some company; they are less finiky than most of our farm hands. The more intelligent and cultivated people become and the better their own homes, the less exacting they are in the home of another. There are plenty of worn-out school marms and tired city people who want only quiet and country for a few summer weeks. To these the farm houses should be open, but only with the understanding that they must not expect extras.

Just a glance at the hired girl problem. It is easy to require another to do things that we would not do ourselves if we were doing the work. The majority of girls wish to do about what is right. Many do not know. A good plan is to give them freedom to do as they choose and do the rest yourself for a time. If the girls have a disposition to work they will catch on; if they haven't, they might as well go home first as last. It does not seem best to give a girl many directions; what is an easy method for one is hard for another, and the method does not matter so much in small things provided the result is good. The old notion that house work away from home is degrading still keeps many bright girls out of it. You would not wish your girl to go out to work; why? Caste and servitude (not exactly such as they had in the south) still color this question. When we are more democratic and do not require our girls to do so many unnecessary things, brighter girls will help us with our house work. Imagine treating our hired girl as we would a neighbor or friend who had come in for a few days to help us out in case of sickness.

The life a girl has in a store or factory is not one half as desirable from any standpoint as doing housework in a farm home would be if we chose to make it so. The desire to get all we can out of employees and pay as little as possible must go if we would keep intelligent help. Other people pay extra if they have extra hours of service and we must do the same.

There is the general impression that farmers' wives are the hardest working women in the country; if this be true it is a compliment and not in any way derogatory. If we work the hardest we should do the most good in the world. Let us be sure that we are working to some purpose; let us put our leisure time toward something more worth while than afternoon teas. I fail to see why women, healthy, strong women, should be permitted by those who support them to be the drones of society. Too often the young man looking for a help-meet finds the young woman who wishes to be supported in idleness. Let us see to it that no such principles as these are taught either by precept or example "in the house on the farm".

We can make of our homes what we will; we can make home a place where our thoughts never get beyond something to eat and something to wear, both of which are essential but not so in the elaborate form of the present generation. With modern conveniences and a cultivation of simple tastes and habits the time spent on these things may easily be cut down one half. What better use can we make of the time thereby saved? It is a first duty to keep rested, then think, study and read; get acquainted with your neighbors; generate and dispense helpful ideas. The farmers' reading circles, where the results of the scientific study of agriculture are investigated, are a step in advance of the old fashioned gossipy quilting parties. The latter was aimed at material welfare, the former means mental improvement.

One thing further,—happiness. This is a condition not of the air or the clothing or the stomach, but of the mind. We are happy when we choose to keep our thoughts on the pleasant things, when we prefer to think on disagreeable things we are unhappy. We can't have the blessings of happiness while we fret and worry and stew. It is for us to choose, we can be ever mindful of dull cloudy days or we can think on the glory and beauty of the bright sunshine. The women who are always seeing, thinking and speaking of pleasant things are the kind we want in our farm homes. We should form the habit of magnifying the good. There is always good cheer if we look for it, but if we ever turn our gaze toward failures and disappointments for us there is nothing else. For us there may be everything else.

"There is a low, deep undertone
A pealing in our organ world
Of chords divine:
A rich melodious harmony
Pervading every path of life,
An ocean swell, an ocean calm,
Deep breathing of the seas,
With life divine."

"A TALK TO THE CREAMERY BOYS OF VERMONT."

PROF. IVAN C. WELD, ASSISTANT DAIRYMAN OF DAIRY DEPT., WASHINGTON, D. C.

Creamery butter constitutes one of the principal agricultural products of Vermont. Its production and sale is directly responsible for a large measure of the general prosperity of the State. Furthermore, Vermont butter is a product in which every true Vermonter takes a peculiar pride and interest. In view of these facts a discussion of some of the conditions affecting the quantity and quality of creamery butter would always seem to be in order.

Briefly stated, the work of a creamery man is to receive the milk or cream from the farmer—make it into butter and in som instances, at least, to purchase necessary supplies and market the finished product. These duties, combined with the care of the apparatus, the building, and possibly its surroundings, constitute the chief duties of the creamery manager. To discuss all the conditions and questions in connection with creamery management would hardly be possible. I will, therefore, confine myself to two or three things which, in the light of recent developments, seem to be of particular importance.

I want particularly to call your attention to the importance of every butter-maker giving his undivided attention to the details of his business and securing the necessary information for a complete record of each day's work.

In some sections of New England, competition between creameries and other markets for milk and cream is very keen, but whether there is competition or not every creamery man should get for his patrons the last possible cent in the business.

The recent advent of several reliable methods for determining the percentage of moisture in butter, marks the beginning of a new era in creamery butter-making. Its use enables the creamery man to do more careful and exact work. Butter-fat is a comparatively expensive product. Every pound of it should be accounted for and the creamery man in the future must regard the composition or per cent. of fat in the butter which he sells with just as much concern as he now regards the per cent.

of fat in the milk or cream which he receives. The moisture test now makes such information possible. With the information thus gained a creamery man can now proceed in an intelligent manner to so regulate his methods as to prevent possible unnecessary loss and to secure the greatest possible overrun consistent with the best possible quality. The moisture test should be regarded as a necessity in every well regulated creamery. It practically supplies the last need of the up-to-date buttermaker who, if provided with a good building and equipment, is now enabled to exercise complete control over every condition after the milk or cream is placed in his care.

Of all the things which today contribute to a creamery man's burden, the condition of the milk and cream when received at the creamery causes the most anxiety. In probably not more than one case in a hundred can a creamery man exercise any control over the production and care of the milk or cream from which he is expected to make prize-winning butter. *Quality* is a matter of great importance and quality in creamery butter cannot be too strongly guarded. This is especially true here in New England at the present day. You cannot afford to allow the western goods to gain first place in your own home markets. During the past few years but little improvement has been made in quality. This too, in spite of the fact that creamery buttermakers, as a class, have never been so well informed regarding their work. Never before have they been able to make use of as good machinery and special apparatus, and never before has a fine quality of butter been more eagerly sought after by the consuming public. In many instances the quality of creamery butter has actually bcome poorer in spite of the above mentioned improved conditions.

The reason is seemingly found in the gradual change which has taken place in the methods employed by dairy farmers in delivering their product to the creameries. This change has resulted in the acceptance and use by creamery men of a poorer grade of milk and cream for butter making. For several years creameries, as a rule, received whole milk only from their patrons, separating and retaining the cream at the creamery, thereby gaining possession of the product while it was still fresh. With the invention, development and distribution of small cream separators, operated by hand, or other light power, there occurred a gradual change or drifting away from the so-called whole milk system. Under present conditions, a very large percentage of cream used for butter making is separated from the milk on farms and a certain amount of responsibility is thereby shifted from the creamery manager to the creamery patron.

He not only produces milk but also manufactures cream for the creamery. Many farmers have not kept pace with modern dairy practices and some do not full yunderstand how to properly care for a cream separator. It sometimes happens that separators are used several times without being properly cleaned and in some instances they are placed and used in some convenient, but dark and dirty, corner of the barn. Crea mseparated under such conditions is usually brought in contact with undesirable odors, and bad flavors are but the natural result. It frequently happens that cream is not cooled to a low temperature and properly cared for after it is separated on the farm, and often it is of uncertain age when delivered at the creamery. In some localities competition may exist and in order to prevent patrons of a creamery leaving it for another, or for a city market, the management makes a practice of allowing or compelling their butter-makers to accept cream or milk of an inferior quality. It is evident no improvement can be made in the quality of creamery butter until some improvement is caused to be made in the care of milk or cream on the farm, and the condition of milk and cream when delivered to the creamery. It is not wholly the lack of knowledge on the part of the dairy farmer that is responsible for the condition of his product. It is more often due to habitual carelessness, and a failure to fully realize his responsibility in the matter of cleanliness, low temperature, and prompt delivery of a perishable food product. It seems necessary to overcome this condition before any great progress can be made in securing a better product from the farm. The condition of milk and cream furnished for butter making is a cause of never-ending anxiety to the butter-maker and frequently a source of trouble, only ending with a lot of poor butter. Dissatisfied customers and financial loss are sometimes traceable to the product of a single careless patron. This careless patron, however, receives just as much money for his product as did those who were cleanly and painstaking in all their methods.

With these conditions in mind, a plan for grading and scoring milk and cream when receiving it at the creamery, and grading the price paid patrons for butter-fat in milk and cream of various grades, has recently been worked out and put in successful operation.

The apparatus and methods employed in determining the quality of milk and cream may be extremely simple and inexpensive. A wooden frame cut from a wide board is placed on the top of the weigh can at the creamery and is held in place by short wooden pegs on the under side. This frame is to support a tin funnel about fifteen inches in diameter at the top and seven inches at the bottom. Over the top and inside of this funnel is placed a clean cloth strainer, through which the patron of the creamery pours his milk or cream. Any coarse or undissolved dirt or foreign matter in the milk or cream will be caught and held by the strainer as the milk or cream passes from the patron's cans to the tank on the scales. A clean strainer cloth is used for each patron's milk or cream. By this simple method the milk or cream from each farm can be easily, accurately, and quickly examined for dirt or foreign matter before the very eyes of the producer. The general condition of cans, covers, or stoppers must be watched carefully and the use of dirty or rusty cans discouraged or prohibited. Churned milk, frozen milk, thick or clotted cream are some of the conditions for which deductions may be made on the score card. Too often milk and cream is delivered at a creamery in a condition altogether too sour for use in making the finest grade of butter. To determine the approximate acidity of the various samples, Farrington's Alkaline Tablet Test is particularly convenient, or Mann's Test may be used. Either outfit may be secured from any dairy supply house with full directions for use. A standard for acidity should be established which will be safe for a cream trade or for butter making and yet not be unjust to the milk or cream producer. A standard of .20 per cent. acid will doubtless be high enough for any purpose. In some cases, however, a standard of .25 per cent. may be allowed. Perhaps the most important thing to be considered in scoring or grading milk or cream is its flavor or taste. Upon the flavor of the milk or cream received at the creamery largely depends the quality of the finished butter. A few bad flavored lots of milk or cream may seriously damage the quality of the day's product. By tasting a sample from each lot of milk or cream delivered, a good creamery man, after some practice, will be able to recognize the various flavors in different lots and give to each its proper rating or score. As the flavor or taste of milk and cream is easily changed when brought in contact with various substances, the nature of the difficulty should, when possible, be indicated and a remedy suggested.

A score card has been arranged and has proven to be very useful in describing in detail and recording the condition of milk and cream. The score card is also a particularly valuable agency for presenting such detailed information to the creamery patron. In fact the score card's greatest usefulness is the service it renders in presenting to the milk and cream producer a comprehensive and accurate idea regarding the condition and quality of his product.

Score Card for..Creamery Patrons

Name.. Address..

Flavor and aroma 50 points.	Acidity 25 points.	General conditions of cans and contents 25 points.	Perfect score 100 points.

Faults are indicated below.

Flavor.	Acidity.	General condition.	Remarks.
Bitter........................		...............Lumpy cream...........	....
Silage........................		...............Rusty cans.............	....
Manure......................	High	...............Dirty cans..............	....
Weedy........................		...............Churned..................	....
Bad: Unable to describe..............	Sour	...............Frozen.....................	....
		...............Foreign Matter.......	....

Signature..Judge..........

Date..190..

As will be noted, 50 points are given to flavor and taste, as the flavor of milk and cream, more than any other condition, determines the flavor or quality of the butter; 25 points are given to acidity, that is, the amount of acid or degree of sourness which has developed. 25 points are also given to the general condition of cans and contents. Deductions are made according to the conditions found. It therefore becomes possible to discourage, by means of the score cards, the presence of foreign matter and various things which in one way or another get inside the milk cans of careless patrons. It can also be used to discourage the use of milk cans of a questionable nature and condition and the development of too much acid. Butter-makers as a rule cannot hope to meet and explain conditions to many patrons—the score card reaches every one. During the time the method was in use by me, the quality of milk and cream received was slowly but constantly improving. While some patrons always furnished a uniformly high grade product and were conscious of the fact, others were surprised to know that their product was in any way bad, and quickly and cheerfully improved its quality. Others, of course, were slow to recognize anything wrong and slow also to remedy the difficulty.

A creamery patron receiving a score card with the condition of his cream or milk plainly described, can see just where improvement is necessary. In adopting the system of scoring or grading milk and cream, it will be necessary also, if the plan is to be effective, to adopt a definite scale of prices to be paid for butter-fat in milk or cream of various grades.

Enough difference should be made in price so that there will be a strong incentive for each patron to furnish a high-scoring product. The following arrangement of prices for butter-fat in various grades of milk and cream proved to be quite satisfactory:

One cent extra per pound was paid patrons for butter-fat in milk or cream scoring 95 points or over.

Usual price per pound was paid patrons for butter-fat in milk or cream scoring 90 and under 95 points.

One cent less than the usual price per pound was paid patrons for butter-fat in milk or cream scoring 85 and under 90 points.

Two cents less than the usual price per pound was paid patrons for butter-fat in milk or cream scoring 80 and under 85 points.

Three cents less than the usual price per pound was paid patrons for butter-fat in milk or cream scoring 75 and under 80 points.

Patrons furnishing milk or cream scoring under 75 points have at once been notified that they must improve the product or it would be no longer accepted at the creamery.

Each patron's milk or cream was sampled and scored at least twice each month; the average of these scores was accepted as a basis for grading the price per pound for butter-fat.

The world is gaining wisdom and in its demands for cleaner and purer food products it is but natural that the milk and cream and butter supply should receive some attention. It is for the best interests of all dairymen that the consuming public should have absolute confidence regarding the cleanliness and purity of all dairy products.

In the interest in matters pertaining to the breeding and feeding of cattle, some producers in the past may have occasionally lost sight of the matters that pertain to health of the cows and the cleanliness and purity of her product. Stable ventilation, light, drainage, and the proper disposal of manure, are matters that directly affect the health of the herd and the purity of milk and cream; slight inexpensive changes in construction or arrangement frequently help to keep the atmosphere and cattle cleaner and improve the chances for keeping the herd healthy and its product pure.

During the past few years many dairymen have learned much regarding the importance of clean milk and cream and of clean, well ventilated and well lighted stables. Many dairymen now know and others have yet to learn something of the evil nature and influence of even a little dust in the air of the stable, or a little loose dirt or hair on the cow's udder and flanks at the time of milking. Many dairymen now know and others have yet to realize that a milk pail, strainer, or creamery can, that has not been well cleaned, may become a source of trouble. Many dairymen now know and many have yet to learn that even a very small piece of dirt, a hair or a fly falling into the milk carries with it many thousands of small plants which find in the milk conditions well suited to their growth and increase and the consequent development of bad odors and disagreeable flavors. Dairymen, as a rule, are careful to strain out visible things when by some accident they get into the milk—if the little plants or bacteria were only large enough so that the dairymen could see them they would doubtless remove them also. Unfortunately they cannot see them or remove them, hence it becomes the duty of every reputable creamery patron to observe and practice such methods as will keep dirt and bacteria out of the milk, so far as it is possible to do so.

Second only in importance to cleanliness, in all its details, is the matter of prompt and efficient cooling of milk or cream to prevent bacteria increase and thereby preserve it in good condition until delivered at the creamery—the cooling cannot take place too quickly after the milk leaves the cow, neither can the temperature be too low if the milk is not actually frozen.

It is a well known fact that many dairymen who produce clean milk or cream of excellent quality become disgusted when, on delivery at the creamery, they receive the same price per pound for butter-fat as does the patron who furnishes an inferior product. Under such conditions there can be no possible incentive for a producer of a good milk or cream to continue to be painstaking, or to make an attempt to further improve the quality of his product. The system of scoring or grading milk or cream and grading the price paid creamery patrons for butter-fat according to quality or condition of the milk or cream from which that fat is obtained, would seem to be eminently just to the producer as well as to the creamery and it, furthermore, encourages improvement all along the line. While a part of the work of grading can be done by the use of tests which give results directly expressed by figures, other parts of the work are dependent solely upon the good judgment, ability, and honesty of the person who has the work in charge. In some instances it will be possible and desirable for creamery managers, personally, to score or grade the milk of their patrons. In other cases it will doubtless be possible and much more desirable for a group of creameries in the same locality to combine for the purpose of employing an expert who would do the scoring for each. This system would at least insure uniform methods and uniform standards among neighboring creameries. With fresher, cleaner, better flavored milk and cream delivered regularly to our creameries, the quality of creamery butter can be still further improved and higher prices realized in the market and on the farm.

I believe the dairymen and creamerymen of New England owe it to themselves and to each other to give more attention to increasing the quantity and improving the quality of dairy products for New England markets.

·In any effort to promote your interests, I can assure you, the Dairy Division of the United States Department of Agriculture will render all possible aid.

DISCUSSION.

MEMBER:—As the result of your experience I would like to ask if the bitter flavor is caused by the freezing of the cream?

PROF. WELD:—I would have Mr. Orrin Bent answer that.

MR. BENT:—I can't say exactly; I sometimes find a bitter taste when the cream has been frozen, yet I can't say but you might have it frozen and yet come out all right.

PROF. WELD:—While the quality will be somewhat impaired, the mere freezing of the milk and cream is not likely to ruin the butter. The chief difficulty with frozen milk or cream is the fact that when received, it is hard to handle. This is especially true if you attempt to get samples for testing; it simply means the creamery man has got to thaw that milk or cream before he can get a fair sample for testing. While the matter of quality may be considered, the solidified condition of frozen milk is much more annoying.

QUESTION:—Can you get a correct test of frozen milk or cream?

ANSWER:—Not unless the milk or cream is completely thawed and mixed.

QUESTION:—Can you then?

ANSWER:—Yes, sir, without any difficulty whatever.

QUESTION:—Would it not be a good plan to have an expert in each State to travel among the creameries and score their milk and cream?

ANSWER:—In regard to the desirability of grading or scoring as an incentive for the delivery of better milk and cream at our creameries, there can be no doubt—but how can it be done?

In my paper I suggested two methods: First, in some cases it will be possible for the creamery managers or butter-makers to do the work themselves; this should be possible in those creameries where the number of patrons is somewhat limited and where the ability and honesty of the manager is known and unquestioned, and where he commands the entire confidence and respect of his patrons. Second, where any one of the above conditions do not exist, it would doubtless be better for a group of creamery men to combine and employ an expert who is not interested, to go about from creamery to creamery, grading the milk and cream and in other ways helping to improve the quality of the butter.

MEMBER:—Referring to the question of the freezing of milk and cream, I would like to ask if it is not generally understood that when the cream is once warmed to a certain degree and then is cooled, although not quite frozen, whether the tendency is to make it bitter?

PROF. WELD:—In reply to that question I would say that the cooling of the milk or cream to approximately the freezing point would probably not impart any bitter flavor to the product; but if cream or milk is held at that temperature, there may develop in that milk or cream certain bacteria which are capable of growing even at low temperatures and which produce a bitter flavor. Some milk and cream producers will argue that they can keep their cream a week or ten days, and not ship it to the creamery more than once in that time, simply because they keep their product cold. It may be in some cases the conditions will be so exceptional that they are able to keep milk and cream from two to three days in good condition, but a week or ten days is altogether too long. Milk and cream is a perishable product and it should only be used when in a fresh condition.

"COW TESTING ASSOCIATIONS ONCE MORE."

PROF. J. L. HILLS, DEAN AND DIRECTOR UNIVERSITY OF VERMONT, BURLINGTON, VERMONT.

The circus clown, you will remember, vaults into the ring with a somersault, a "whoopla" and the sounding declaration "Here we are again"; and he then hands out time-honored chestnuts.

I follow his example. Here we are again, for the third successive year, 1906, 1907, 1908, dealing with the same old topic, rehashing the same old arguments, pointing out the same old moral. And if the incoming officers of this Association are as foolish as their predecessors have been, and continue to ask me to inflict you in the future, I hereby pledge myself to keep discussing this matter before this body year after year, until from sheer weariness of flesh you either start the work going or else commit the last overt act, which, under the circumstances, I doubt not any court would hold to be a case of justifiable homicied. Cow Testing Associations Once More? Yes, twice, thrice, a hundred times more, until they are thicker on the map of the Green Mountain State than were the freckles on my boyhood's face. For their inception and spread will do more, in my judgment, than will any other one factor to increase the profits of the dairy. In the language of the patent medicine; "it has helped others, it will help you."

It is said that he deserves praise who makes two blades of grass to flourish where but one formerly grew. He who lets but one cow eat that grass where two used to eat it merits applause, provided that one makes a larger return than did the two. And that is just what this associated effort is directed at. Its ulterior purpose is to deplete, to decimate, to dwindle, to drop, to diminish the bovine population of Vermont, to discard dead beats, to deduct dullards, to detect and to drive to death the drones. Thirteen Ds; and if I had any more up my sleeve I would use them. Too many farmers utter other words beginning with D when discussing this subject. It were better for them to discard than to damn, and to invoke the aid of the detective than that of the devil. Let them in their several communities form

Amalgamated Associations for Bovine Betterment, with scales, the Babcock test and the axe for their principal working tools, with more milk and more money for the pass words, with breed, weed and feed as the three cardinal maxims, and Excelsior for the motto; and then let them stick to their work through thick and thin, and improvement is certain.

Cow testing associations, you will remember, are simply voluntary organizations among neighbors who desire through co-operative effort to detect unprofitable cows in their herds. The scheme was first developed some twelve years ago in Denmark and has so spread through that little country that some years ago there were nearly a thousand associations, some tens of thousands of human members, and some hundreds of thousands of bovine members. They are now the vogue all over the dairying sections of Europe and have been in vogue on this continent for some years. When four years ago this month I addressed the Dairymen's Association of the Province of Quebec at Cowansville, I found them agitating the establishment of these associations. Fifty-three have been at work in the Dominion in 1907. The pioneer association was established in the United States in Michigan in 1905. There are now nearly a score in that State. They are well established in Wisconsin, in Minnesota, and, doubtless, in other western states.

A cow testing association is a very simple affair. Moreover it is an elastic sort of a thing. It is a voluntary proposition. Neighbors, patrons of a creamery let us say, get together, conclude that "In union there is strength," and either agree to hire a man to do the work for them or decide upon the methods whereby they may do the work for themselves. In fact there are two distinct working plans for the conduct of these associations: One where the members hire the work done, the other where they do it themselves. The first is the Danish scheme; the second is the one which was suggested by a committee of parties representing New England dairy interests which met at Amherst, Mass., in October last. Perhaps it will be well to outline these two methods, each of which possesses its strong and its weak points.

I. The first named proposition involves the hiring of a man to pass from farm to farm. Once a month—approximately or exactly—he weighs the milk of each cow, samples it, and tests it, and at the end of the year makes out a report as to the year's milk and butter yields of each animal. The agent's stipend is paid by the members of the association, the assessments being in proportion to the number of cows each has under test. The only obligations which each individual member assumes is to transfer the agent from his farm to his neighbors, to board him on the one day of the month when he is at his place, and to contribute the assessed sum to the general treasury. Obviously the expense will vary in accordance with the number of animals under test and the price paid the common employee.

The strong point of this system is that one relatively skilled man is more likely to do accurate work than are several unskilled men. Moreover, if he is well informed and tactful, as he goes from farm to farm he may be able to make suggestions as to feeding and care of stock which will be of advantage to the members of the association. If they see fit, the members occasionally meet for conference, for exchange of views, for comparison of results. The weak point of this proposition is that it is difficult to find the right type of man as employee. Many of the European associations have gone to pieces because of the inaptitude of this peripatetic individual. I understand that the association established last year at Durham, N. H., has fallen by the wayside because the man chosen to do the testing was not of the right sort.

II. The second named system is a home-made one. It is based upon the assumption that the farmers who enter upon such a movement will be candid, honest, and careful. Each member of the association buys a set of spring balances, the ordinary (Chatillon) scale, and procures sample jars in number equal to his cows. He weighs the milk of each animal while in milk, three times a month, say on the 14th, 15th, 16th. He samples the milk of each cow three times a year, the times varying slightly according to the time when the cow calves, the length of lactation, farrowness, etc. Any member may, if he will, test these milks himself; or arrangements may be made with some one member to test all the samples for the entire membership; or some local creamery operative may be employed to test them. The expense item then becomes simply the initial cost of the scales and sample jars, and the charge for testing. The time element is so slight and so thoroughly distributed as to be negligable.

The strong points in this scheme are its simplicity and its relatively low cost. Another advantage is to be found in the minimising of testing work. Tests are made monthly when the first scheme is employed; but thrice yearly when the second is used.

Its weak points lie in the fallibility of human nature, which is inclined to be careless, to fail to follow directions, or indeed, to falsify. The chances of error in the work as carried out according to this second scheme are many times greater than when the first one is employed, and it must be admitted that the results would have value as a rule only to the person who attains them.

Either scheme, if properly carried out, affords results which are sufficiently accurate for all practicable purposes.

In short concerning cow testing associations it may be said:

(1) That they are simply local organizations of dairymen who seek through co-operative effort to detect unprofitable cows.

(2) That they are inexpensive affairs.

(3) That they do not involve much work, effort, or thought.

(4) That the details of their conduct are few and simple.

(5) That thousands of such organizations are extant and doing much good.

(6) That the form of organization is very elastic.

(7) That many New England creameries are committed to aid in the furtherance of the scheme.

(8) That results are accurate enough to serve the purpose.

(9) That there is nothing patent or proprietary about the scheme, no promoters, nothing to sell, no one to sell.

(10) That results are private if desired.

(11) That granges, creameries, any local dairy center may well form the nucleus of such an undertaking.

(12) That in each New England state there is some agency, State Dairy Commissioner, Dairyman's association, or Experiment station where counsel and assistance may be sought.

Attention is called to the reprints from the New England Homestead of November 9 last, distributed throughout the hall. This particular paper has taken much interest in the cow testing proposition and for some months has been discussing it in its columns, and urging New England dairymen to inaugurate it.

Now what has been done of late in this vicinity in the line of cow testing associations?

The Dairy Commissioner of the Dominion of Canada, states in a recent letter that, "we had fifty-three associations last year of about twenty members each, with a total of 7,000 cows under test. The members of the association provided their own outfits, took the samples, and delivered them at the points where the testing was done. The department did the testing, provided blank forms free, compiled results, and made an annual report." Just half of these associations were located in the province of Quebec. For the coming year members will be required to pay for the cost of the testing at the rate of twenty cents per cow per season. Commissioner Rudick says further that "apart from the work done through the associations a very large number of individual farmers have been encouraged to take up the work in their own behalf; and the most valuable feature of the work is that it leads farmers to think and act for themselves:" That "there is a strong tendency to depend upon the Government to do everything, but we are trying to get them away from that idea and for that reason are to charge twenty cents per cow during the season of 1908." He "realizes that there is much educational work to be done before this whole question is taken up with the farmers and studied is it should be." I have posted near the entrance of this hall a series of statements by the Canadian Dairy Commissioner concerning their cow testing work reading as follows:

Dominion Department of Agriculture.

Branch of the Dairy and Cold Storage Commissioner.

Cow Testing Associations.

The September, 1907, yields in various associations afford some interesting and striking comparisons:

Cowansville, Que.,	111 cows,	48,795 lbs. milk,	2,139.1 lbs. fat.
St. Marc, Que.,	114 cows,	60,045 lbs. milk,	2,675.0 lbs. fat.
St. Prosper, Que.,	113 cows,	78,455 lbs. milk,	3,304.8 lbs. fat.

From practically the same number of cows the owners at St. Prosper obtained 27,660 lbs. milk and 1,165.7 lbs. fat more than did the owners at Cowansville. Butter-fat is particularly valuable now-a-days. It pays to feed well: it pays to feed good cows well. Most of the farmers in the association at St. Prosper have been feeding soiling crops this summer.

Dominion Department of Agriculture.

Branch of the Dairy and Cold Storage Commissioner.

Cow Testing Associations.

Two comparisons of milk and fat yields in the cow testing associations organized by the branch of the dairy and cold storage commissioner are of peculiar interest.

In the Coaticook, Que. association, June, 1907, test 128 cows gave a total yield of 3,412 lbs. of butter-fat, but in the St. Prosper association during the same period 124 cows gave a total yield of 4,002 lbs. of fat, or 590 pounds more. The average yield per cow at Coaticook was 26.6 fat, and at St. Prosper, Que., 32.2 lbs. of fat per cow in 30 days.

Did you catch that point? In one association a lot of 124 cows yielded an additional 590 pounds of butter-fat over the total product of another lot of 128 cows in another association. This is equivalent to at least one hundred and forty dollars, representing the amount of hard cash that the 128 cows might easily have returned to their owners more than they did—and that just in 30 days. A simple word of advice that means thousands of dollars extra into the pockets of our farmers is just this:—Get rid of the poor cows, and feed the pretty good cows more liberally.

At Warsaw, Ont., 199 cows gave a total yield during the June test of 152,880 lbs. milk, but at North Oxford, Ont., the same weight of milk within forty-five pounds was produced by 147 cows; in other words, 52 cows fewer need have been milked and cared for in the Warsaw Association to bring as much return. What a distinct saving of energy this hot weather, there might be if the general average production were better. The average yield increases quickly when the poor cows are disposed of. The poor cows can quickest be detected just as soon as a record is kept of the production of each cow in the herd. Cow testing associations are of immense benefit in this regard.

I talked to the Maine Dairymen's Association at Auburn, Me., December 4 last, on Cow Testing Associations. I found the audience very receptive. The Maine Department of Agriculture, through its dairy instructors, has been at work for months making ready for their establishment. On December 13, the Waterford Cow Testing Association in Oxford County, Maine, was founded. On Monday evening, December 30, the arrangements were completed, over 300 cows secured, and practical work will begin February 1. Two weeks ago today a temporary association was organized at Winthrop, Kennebec County. 275 cows were promised and 300 will doubtless be shortly secured. Other associations are in contemplation. The system in vogue is Denmark will be employed whereby a paid travelling representative will pass from farm to farm to do the work. Mr. Leon S. Merrill, the Maine dairy instructor, expected to be present at this meeting, but writes me under date of the 4th that a severe cold prevents his leaving Maine. I quote from his letter as follows:—"You may be interested to know something of the progress in Maine. Last Monday evening, December 30, I attended a meeting at South Waterford, at which the arrangements were completed for starting an association. More than 300 cows were included, 273 of them being from the town of Waterford alone. Monthly meetings will be held at which the department will have a representative to advise with them. Their first meeting is to be held Wednesday, February 5. Last week an association was also formed at Winthrop and at the present time has 275 cows. The balance will be secured within a few days. The one at

Waterford will commence practical work February 1; the one at Winthrop, February 1, if possible. We are getting inquiries from all parts of the state, asking that someone be sent them to give the necessary information leading up to the organization of an association. It is not our purpose to encourage the formation of more than three, at the outside, and then devote ourselves to getting results. These two are to work along the lines of those organized in Denmark, with an assistant to go from house to house, weighing, sampling, and testing the milk and calculating the feed. The monthly meetings are an additional feature of the work, but which, we believe will prove of immense value in making the association strong and cohesive in its work."

The cow testing movement was strongly endorsed by the resolutions of the Massachusetts State Grange held at Pittsfield, Massachusetts, December 10 to 12. The Secretary of the Massachusetts State Board of Agriculture has taken the matter up and expects to push it as rapidly as may be, particularly by the work of the travelling dairy instructors. In New Hampshire and Connecticut, the dairy departments of the State colleges are doing what they can to further the work of cow testing associations. A statement in Hoard's Dairyman of January 3, 1908, reads as follows:

WISCONSIN COW TESTING ASSOCITIONS.
ELEVEN SOCIETIES, 2,723 COWS.

The Wisconsin Dairymen's Association is engaged in organizing cow testing associations. It has one man in the field who devotes his whole time to this work. The plan followed differs somewhat from those adopted in Canada and Michigan, but time alone will determine whether it is an improvement. It is bottomed on the assumption that the dairyman will be honest with himself, that he can be trusted to weigh the milk and with proper instructions, to takes the samples. It eliminates as far as possible, the element of officialism and unsolicited advice. It is co-operative to the extent that a sufficient number of dairymen in a neighborhood agree with each other, to pay a stipulated sum per year for a given number of cows in order to raise a sufficient sum to pay some person, selected for the purpose, to test the milk of each cow for twelve months and make report to the owner.

Since the first of last June eleven of the associations have been organized as follows:

1.—Pioneer Cow Testing Association, Eldorado, with 400 cows.

2.—East Fond du Lac Cow Testing Association, Malone, with 600 cows.

3.—Cottage Grove Cow Testing Association, with 134 cows.

4.—Ash Creek Cow Testing Association, Richland county, with 100 cows.

5.—Tomah Cow Testing Association, 205 cows.

6.—West Salem Cow Testing Association, 215 cows.

7.—Wales Cow Testing Association, 100 cows.

8.—Rock Lake Cow Testing Association (Jefferson county), 140 cows.

9.—West Dupere Cow Testing Association with 266 cows.

10.—Omro Cow Testing Association, 220 cows.

11.—West Bend Cow Testing Association, 343 cows.

This makes 2,723 cows, in ten different counties, under test. In additions, there are applications already on file from three other counties, and there are others to follow. It has been the policy of the Dairymen's Association to start these test associations as widely as possible, in the hope that their results would stimulate adjacent localities to inaugurate similar societies, in other words, to have gumption enough to help themselves.

A committee appointed at the Amherst conference last October to further the work of cow testing associations in New England wrote to many of the creamery proprietors and butter makers throughout New England, asking whether they would feel inclined to co-operate sufficiently to test the milk samples of a cow testing association if such were formed in their vicinity. They were also asked their judgment as to the likelihood of the movement succeeding in their communtiy. A large number of replies were received, some of which were optimistic and some pessimistic. In almost every case the answers expressed appreciation of the value of the work and willingness to co-operate to the extent of making the tests either without charge or at a minimum charge. The particular scheme presented in this correspondence was the one wherein the farmer does his own weighing, sampling, and either tests the samples himself or gets them to some central testing agency. I have looked these letters over with a good deal of interest. I find that there were some forty replies received from Vermont butter makers including those on the New Hampshire side of the Connecticut river so close to the Vermont line as to receive more or less of Vermont milk. The bulk of these letters were favorable. Most of them intimated that they thought there would be no difficulty in establishing cow testing associations. However, it seems to me wise to apply a considerable amount of salt to these statements. It is human nature to acquiesce if it costs nothing to do so. So one should discount these many enthusiastic remarks. Note these dissimilar replies from creameries in the same community: A town in Franklin County—"Chances not very good here." "Chances are good." A town in Windham County—"We favor the plan, chances are good". "I favor the plan but the chances are poor". Some of the replies, often from highly intelligent people, indicate that the intent and scope of the movement were not grasped. Hence, while these letters are indicative of interest on the part of butter makers and creamery managers, they do not mean that the scheme will get quickly under way. One of the officers of this Association wrote a very discouraged letter, believing that owing to the indifference of dairymen the association idea will not work. A former dairy school instructor says: "I have advocated for years that the farmers test their cows. Few have heeded it. More of them have been chasing the butter maker than have tried to find their unprofitable cows. It does seem as though some farmers do not care whether they are making or losing money." A leader in the New Hampshire Dairymen's Association, says: "I think someone will have to do a lot of missionary work among farmers." A former dairy school student remarks that "Farmers seem very slow about seeing the advantage of the great plan. An aggressive association in this section is a little doubtful.'' "Do not think farmers would be much interested." "Farmers are skeptical about the value of tests." From milk shipping regions we learn that "The cows that fills the pail is the cow farmers want. They do not care for testing." "Outlook not bright." "Plan good if farmers were aroused. We have tried for years to get our patrons to have their milk tested, but with little success."

Shakespeare sizes the situation well when centuries ago he said: "If to do were as easy as to know what were good to do, chapels had been churches and poor men's cottages, princes' palaces." Among intelligent dairymen there is a general agreement as to the facts: they "know what were good to do," but few do it; and the question arises, what means may be taken to get the ball rolling? Resolutions will not do it. Newspaper articles will not do it. A passive, acquiescent attitude will avail nothing. The only way to do it is to do it; and it will be done only when aggressive, personal work is done among the farmers by visitation at their houses, by elbow to elbow discussions, fireside explanation by a well informed enthusiast of their own type. The Grange missionary method of forming organizations should be copied, and then, when a community has awakened to the opportunity and has formed an association, it should be watched, helped, guided for some months until strong enough to walk alone.

Now all this takes time, effort and money. And I know of but one existing agency in Vermont which can devote sufficient time, affort or money to its accomplishment; and that is this Association. The Agricultural Colleges and Experiment Stations in some New England states are taking hold vigorously; but they have state funds which they can devote to such work. The Vermont College and Station receive no state funds save for specific purposes (printing, feed inspection and forest nursery work and for teaching purposes); and to use United States funds for such purposes is forbidden. The Vermont station officers, more particularly the writer, are using much printer's ink and breath in promoting the cause; but further than this, and the checking of analytical work in cases of doubt, it can hardly go. It is high time that some agency in Vermont should father and mother such a beneficient movement, helping farmers to help themselves. I know that it savors of paternalism, that it is perhaps socialistic in its tendencies, that farmers ought to do it without being coddled; but they won't do it. I said last year, and say it again, that it is high time that a roving agent, a state agricultural tramp should be sent about Vermont, up and down its highways, into farmers' houses, into farmers' meetings, talking, persuading, demonstrating, organizing; a missionary who shall carry these good tidings of better methods. "I'm from Missouri, show me" is the slang phrase. He should show people the right and the wrong of farm methods. These "agricultural extension" movements are differently organized in different states. In Maine the dairy inspector does the work, a deputy of the Commissioner of Agriculture; in Massachussetts there are several men, of whom the dairy expert is one; in Rhode Island he is a college employee backed by a substantial state appropriation reserved for this specific purpose. In New York factory inspectors and the like; in Quebec and Ontario a multitude of men are at this work in various lines. In Wisconsin factory inspectors, dairy inspectors, dairy agents, and the like are at work all over their state. And so one might go on citing the work in other states, some of which appropriate tens of thousands annually for this sort of effort, not all of which of course is used in establishing cow test associations. The National Government is doing some of this same sort of work, particularly in the south, establishing demonstration farms, all over that section. There are serious dangers in this sort of pampering, dangers of individual cerebral atrophy, dangers in the delegation to governmental authority of the initiative in such movements. However, while recognizing such dangers, one may yet believe that governmental aid may advantageously be invoked in the inception of enterprises which possess such large potentialities, may justify them, in other words, on the ground of public policy.

Now to be specific, I believe that the time is ripe for a legislative committee to survey the systems in vogue in other States pertaining to the administration of state funds for the benefit of agriculture, with a view of comparing them with those in vogue in Vermont. Here in Vermont monies are appropriated to the State Board of Agriculture, to the Dairymen's Association, Maple Sugar Makers' Association, Horticultural Association, to the State Fair Commission, to the University of Vermont, to the Agricultural Experiment Station, and to the State Cattle Commissioner; all for the furtherance of the interests of agriculture. Almost every session during the last twenty years has added to, subtracted from, or modified the duties of the organizations. The system, if such it can be called, like Topsy, has "just growed." It is neither logical, coherent, nor as effective as it may be made. It compares very unfavorably as to effectiveness in some particulars with the systems in vogue in other states. It is conceivable that such an inquiry, made not in the least in a hostile spirit, would result in its betterment. It is conceivable that if the system were co-ordinated and modernized an equivalent expenditure of money and of effort might yield better service. If such an inquiry were made and legislation resulted, I should be greatly disappointed if in some way provision were not made for an agricultural field agent, whose life work should be devoted to the material uplift of Vermont agriculture. Such a man should be a rare one. Had I the duty of selecting him I should not know at this moment where to put my hand on him. But, if obtained, he would have cow testing associations going in a dozen communities in a year or two and would do much to wake things up.

But such a legislative inquiry may or may not come about; it is more likely not to occur than to occur and in the mean time this Association has a duty to perform. Now criticism of ourselves by ourselves, so be it it is candid, ought not to hurt but to help. I have been a member of this body since 1892. I have attended 18 consecutive meetings. I have addressed 16 consecutive meetings. The accounts are always audited but I have yet to hear them classified and analyzed. Let us do this with the 1907 data. Last year's income exclusive of the special premium fund, $1,650; speakers, 25 per cent.; officer's expenses, 20 per. cent.; printing and postage, 23 per cent.; premiums, 25 per cent.; miscellaney, 7 per cent. No graft whatever, not the remotest suspicion thereof; but I raise the question as to whether as great a value has been received as may in the future be attained by a change in the method of expenditure. I question whether if say $500 were not bodily appropriated to hire a man to try and get cow testing associations started in Vermont it would not be the best $500 ever spent by the old association. I believe that it could be done; that two young men of the right type, well informed, enthusiastic, during the next three months could get a few started which would prove a leaven to leaven the lump. The Maine and the New Hampshire Associations, each with $500 State appropriation from which the New Hampshire body prints its reports, had fine meetings last month with programs comparing favorably with ours. We can curtail our program a bit next year, (the speakers cost but one-fourth of the total sum) and try the scheme. If it fails, at least we have deserved success; have got out of a rut (we are in one); have made folks sit up and take notice. To have fathered the cow testing association movement in Vermont were worth more to Vermont agriculture than any one, yes than any ten meetings of this Association. The Wisconsin Association has shown us the way. Let us follow it.

I am advised in advance of its publication of the following leading editorial which will appear in this week's "New England Homestead," distributed tomorrow.

"The annual meeting of the Vermont State Dairymen's Association was held this week at Rutland, with encouraging results. This Association is claimed to be the largest of its kind in New England and has surely done much to advance dairy interests in the Green Mountain State. But, is it living up to its full measure of duty and responsibility? An organization of its magnitude could well take hold of such enterprises as cow testing associations and actually accomplish results rather than forever talk about it and pass the matter lightly by in saying; "Yes, it is a fine thing and ought to be done." Dr. J. L. Hills, director of the Vermont experiment station, has urged the Dairymen's Society for several years, to get this movement on its feet so there would be fewer cows in the state that are running their owners' in debt. The Wisconsin Dairymen's Association has fathered cow tests associations in that state the past year. What better service could the Vermont society render the State, than a similar activity? The association has $1,000 annually from the state, and several hundred dollars income from special premiums, advertising, etc.; it also gets its annual report printed free. Would not some of this money bring better results if used to get one, two or a half a dozen cow test associations started, rather than consume all the money talking over the same subjects year after year? The discussions and lectures at the annual and other meetings are surely helpful, but isn't it about time to do something? Perhaps the meeting this week will provide for this very important matter, and if it does, the Association will thereby take on a new lease of life. The department of agriculture in Maine has within the past month organized two active cow test associations, and there already more applications from dairy sections who want to take up the work than the State department can accommodate at this time. Of all states in New England, Vermont can least afford to neglect cow testing societies. The "New England Homestead" hopes to record in next week's issue that the Vermont State Dairymen's Association has taken positive steps to put the testing movement on its feet."

The business meeting of this organization is to follow immediately after the reading of this paper. I propose to offer and to move the adoption of a resolution which I handed yesterday to the Chairman of the Committee on Resolutions, and to each officer of the Association. I am not particular as to its exact wording, so long as the end which is sought is gained. It will serve at any rate as a basis for discussion. It reads as follows:

RESOLVED.—That the incoming President of this Association be and hereby is instructed to confer with the Attorney General and the Auditor of Accounts as to the legality of the use of a portion of the state funds appropriated to this Association under Section 337 of the Public Statutes, in the furtherance of the Cow Testing Association movement in the manner indicated in the following resolution:

RESOLVED.—That, provided in the opinion of the Attorney General and of the Auditor of Accounts, it is legal to use a portion of the money appropriated under Section 337 of the Public Statutes, for the futherance of the Cow Testing Association movement, the incoming officers of this Association are hereby charged to use their best endeavors through the use of field agents or otherwise, as to them seems best, to secure the establishment of not to exceed four cow testing associations in the State during the present year, and to furnish such associations, so far as may be needed and is possible, assistance in their conduct.

RESOLVED.—That this Association hereby appropriates not to exceed $ to be used during 1908 under the direction of its officers in carrying out the foregoing resolution.

Vermont is the typical dairy State of New England. It is bounded on the north by the 53 Cow Testing Associations of Quebec; on the east by the several Cow Test Associations now or in the past at work in Maine and New Hampshire; on the south by the resolutions of the Massachusetts State Grange and the active interest of the Secretary of the State Board of Agriculture and his field agents, in behalf of this movement; and it is bounded on the west—at some little distance—by the Cow Test Associations of Michigan, Wisconsin, Minnesota, and other western states. I believe that I was the first person to broach this matter in a public way in New England at a meeting of this Association two years ago. The Association at that time appointed a committee, which has by its campaign of publicity served to bring the matter fairly well before Vermont farmers. "The New England Homestead" has done great things during the past few months in getting New Englanders into a receptive frame of mind. Other New England States are at work along this line. Is it not now time for Vermont to "get busy?" She cannot, as I hoped she would do, lead the procession, but she can follow the good example set in Maine and in Wisconsin. And it is for you, gentlemen, to decide whether she shall or shall not lag behind in this movement.

Discussion of this resolution was deferred until the business session.

REPORT OF THE COMMITTEE ON RESOLUTIONS.

The Vermont Dairymen's Association at its thirty-eighth annual meeting convened at Rutland, has reason to congratulate itself upon the enthusiasm of this meeting and the prosperity of the dairy interests of the State.

We extend our congratulations to the people of the State upon the fact that harmony and fraternity has attended this combined convention of the Vermont Dairymen's Association, the Vermont Sugar Makers' Association, the Vermont Forestry Association, and the Woman's Auxiliary, thus aiding and promoting the best interests of each association and contributing to the advancement of these various interests. It is this spirit of co-operation that will enable our State to continue to carry the banner of progressive agriculture and our people to enjoy its blessings.

To our speakers and those who have kindly contributed to the success of this convention, we hereby extend the thanks of this Association, as we do also to the railroads for their co-operation, and to the city of Rutland and its hotels for their hospitality. Especially are we indebted to Mr. G. H. Grimm of this city for his personal effort in making this meeting a success.

RESOLVED:—That it is the opinion of this Association that the time has now come for the formulation and adoption of some plan of industrial and agricultural education for our boys and girls. We therefore respectfully urge that our next State Legislature take some definate action toward the establishment of these courses in our public schools.

HOMER W. VAIL,
E. S. BRIGHAM,
F. W. DRAPER,
Committee on Resolutions.

Upon motion the report was accepted and adopted.

THE BUSINESS MEETING AND ELECTION OF OFFICERS.

Prof. Hills' resolution was read by him and he also moved the adoption of the same. Mr. Northrup of Sheldon, offered an amendment as follows:—"That a committee of three be appointed to see if they can secure an appropriation to carry on four testing associations in the State of Vermont."

MR. PIERCE of Brattleboro:—On consulting with the officers of this Association I find there is objection to using any sum of money from our treasury or from the appropriation we receive from the State in this direction. They believe we have no more money than we need for the purpose of carrying on our work and I am inclined to think they are right. I am heartily in favor of this resolution for I believe the time has come for us to take up this work in this State, and if the Vermont Dairymen, as an Association, can't do it, let the State of Vermont do it; and I would move an amendment to the resolution that the matter be referred to the State Board of Agriculture.

MR. ADAMS of Derby:—I heartily endorse Prof. Hills' position and I hope the resolution and the amendment of Brother Pierce will prevail.

MR. EDDY of Stowe:—I believe in cow testing associations, but I do not believe their support should come from the funds of the Vermont Dairymen's Association nor from the Board of Agriculture.

MR. CANDON of Pittsford:—I believe we are trying to shirk our responsibility in attempting to get some organization to bear the expense when it should be borne by the producer.

MR. AITKEN of Woodstock:—I thoroughly believe in cow testing associations, but as to whether the expense for operating them should come from this Association, the Board of Agriculture or the Legislature, I am in doubt. As I understand it, the amount necessary to conduct them is not known and I don't quite see why either of these associations should be called upon to pay for what the farmer should pay himself.

PROF. HILLS:—My proposition is simply this; that this Association, through its officers, employ field agents to go into communities for the purpose of presenting to the people the idea of forming cow testing associations; that in this way three or four of such associations might be formed in as many different sections of the State; and that as demonstrations were made of the work other places would take it up and form further associations.

MR. BLOOD of Norwich:—There is no question but what the testing associations would be a benefit to the farmers. There is no organization in the State that can reach every farmer as the Board of Agriculture can.

MR. PIERCE of Brattleboro:—I offer the following amendment to Prof. Hills' resolution: "That the matter be referred to the State Board of Agriculture for consideration. If after consultation with the Attorney General in his opinion a certain amount of the appropriation can be used for the purpose named, it is the sense of this meeting that the State Board of Agriculture use an economical sum for the forming of cow testing associations." If this amendment is not accepted a Legislative committee should be appointed to ask the Legislature to do something along this line.

PROF. HILLS:—I wish it understood that I have no feeling in regard to the wording of my resolution and am perfectly willing that it should be changed in any way which will secure the general end sought.

Upon vote the Pierce amendment was lost.

MR. HITCHCOCK of Pittsford:—I move the adoption of Prof. Hills' resolution as read.

Upon vote the motion was lost.

MR. NORTHRUP of Sheldon:—I move the appointment of a committee to go before the Legislature and ask for an appropriation to be used in the establishing of cow testing associations.

Seconded.

PROF. HILLS:—May I suggest that this Association pay the reasonable necessary expenses of such committee; not compensation for services, but simply the necessary expenses, not to exceed $75.

Amendment accepted by Mr. Northrup.

Upon vote the motion was carried.

The following Legislative committee were appointed by vote. Prof. J. L. Hills of Burlington, F. L. Davis of North Pomfret, G. W. Pierce of Brattleboro.

ELECTION OF OFFICERS.

Mr. C. F. Smith nominated C. F. Eddy of Stowe, as President. The nomination was seconded by Mr. Blood of Swanton; and upon vote Mr. Eddy was unanimously elected as President and was escorted to the chair by the two gentlemen presenting his name.

Mr. B. A. Hatt of South Ryegate, was unanimously elected as 1st Vice President. The name of George H. Dunsmore of St. Albans, was presented for 2nd Vice President and upon declining to serve, Mr. Hitchcock presented the name of J. B. Candon of Pittsford, who was unanimously elected to the office.

Mr. F. L. Davis of North Pomfret, present Secretary was unanimously elected to succeed himself. Mr. M. A. Adams of Derby, was also unanimously elected to succeed himself as Treasurer, and Mr. C. F. Smith of Morrisville, was unanimously elected to succeed himself as Auditor.

UPON MOTION THE MEETING ADJOURNED.

THE BANQUET.

The annual banquet was held in Dunn Hall, Thursday evening at seven o'clock. The Rutland Catering Co. had charge of the affair and served a most excellent meal. About four hundred covers were laid; an orchestra furnished music and good humor was manifested throughout the evening. At ten o'clock the speech making commenced and it was well toward morning when Hon. Allen Fletcher, who responded to the toast, "The Benefit of Farmers' Organizations", the last speech on the program, and to whom Toastmaster Brown referred as gubernatorial timber from Windsor County,—closed his remarks.

Thomas H. Browne of Rutland, acted as toastmaster and in such capacity took advantage of his prerogative to flatter or otherwise, all to whom he referred.

Gov. Fletcher D. Proctor spoke in his usual logical manner, referring especially to the general awakening of Vermont, to her responsibilities and possibilities.

Mayor R. L. Richmond of Rutland, spoke briefly in a way of welcome.

"The Business Possibilities of Vermont " was the toast allotted Lieut.-Governor G. H. Prouty, and he spoke for a few moments on the subject.

Prof. J. L. Hills, Director Experiment Station, Burlington, responded to the toast "Our Morrill Hall", Prof. Hills wished to impress upon all Vermonters the importance of agricultural work and desired each person to feel his personal share in the Hall saying, "Our Morrill Hall" was *ours* in every sense the word implies.

Prof. W. J. Spillman, Agriculturist in charge of Farm Management Investigations, U. S. Department, Washington, D. C., referred to the deep esteem and well nigh reverence in which Senator Morrill's name is held throughout the western states. He also explained the work of his department and referred to Senator Morrill as a philanthropist in agricultural lines, as through his influence and endeavors numerous schools throughout the country had been established and legislation along agricultural lines enacted.

The toast, "The Ministry of Agriculture", was responded to by Rev. W. H. Spence of Rutland.

W. F. McSparran of Furniss, Pa., delivered in a most delightful manner a well prepared address entitled, "The Thoroughbred Farmer," closing with the following poem:

Who is the man with feet firm set
On the earth that strengthens him,
Whose high held head and thoughtful brow,
And supple, sinuous limb,
His kindly heart and generous hand
Mark him as lord of Nature's plan.
Whose forceful balancing of parts
Make him the gentleman?
Ah! that's the man who gives our land
The blood that's always red,
The one who in the race can win—
The farmer Thoroughbred!

No local fences hedge him in,
Indigenous is he—
Wherever country homes are built,
Where'er God's work may be,—
There he is found—mine now to tell
To others of our breed how old,
Vermont hath bred him well!
So here's to his health and happiness,
May he always run ahead!
When ends his race we'll cut for him
On Rutland stone "A THOROUGHBRED."

Mason S. Stone, State Superintendent of Education, Montpelier, spoke on "Agriculture in the Public Schools." He treated this subject in his natural vigorous manner and urged that the study of agriculture should be introduced into the public schools of Vermont.

MEETING OF THE WOMAN'S AUXILIARY.

A meeting of the "Woman's Auxiliary" was held in the Bardwell parlors, January 8, 1908; about sixty ladies were in attendance.

The meeting opened with a piano duet. The Secretary's report of last meeting was read, accepted and adopted.

A paper entitled, "Our Farm Homes and How to Make Them Attractive," was then read by Mrs. Frank L. Beebe of Rutland. It read as follows:—

"Six things are required to create a happy and attractive home.

"Integrity and tidiness the upholsterer. It must be warmed by affection and lighted up with cheerfulness and industry must be the ventilation, renewing the atmosphere and bringing in freshness, day by day, while over all as a protecting canopy of glory, nothing will suffice except the blessings of God.

"There are bright homes and gloomy homes; there are homes that hurry and bustle through years of incessant labor until one and another of the inmates fall, like the falling leaves, and the homes turn to dust.

"Science has done much to remove the drudgery from our homes, by introducing ease and comfort. An ideal home must first have a government, but love must be the dictator. All the members must unite to make home happy and attractive. It matters not whether the home is clothed in blue or purple if it only is brimful of love, smiles and gladness. Our tables should be spread with everything good, wholesome and enjoyable. We should have flowers, pets, everything suggestive of sociability. Flowers are as indispensable to the perfections of a home as to the perfections of a plant, but do not give them all the sunny and pleasant corners and so crowd out the children.

"Let us give our children pets, so that by the care and attention bestowed upon them, they may learn the habits of the animals. Among home amusements the best is the good old habit of conversation.

"If by taste or culture we adorn our homes and grounds and add to their charms, our children will find the quiet pleasures of rural homes more attractive than the whirl of city life. The tasteful improvement of grounds and home exerts a good influence, not only upon the inmates, but upon the community at large. It may be a very humble home. There may be no carpets on the floor, or pictures on the walls; there may be no silks in the wardrobe, but by your faith in God, and your cheerful demeanor, you may garniture that home with more splendor than any upholsterer's hand ever created."

At the conclusion of the reading, Mrs. Beebe was tendered a rising vote of thanks. Then came an hour spent in chatting with past officers of the Association, some time being passed with piano, banjo and mandolin duets, the program being impromtu

PROFITABLE DISCUSSIONS.

At 3 o'clock the presiding officer, Mrs. Mary Smith of Morrisville, asked the following question, "Has the Woman's Auxiliary to the Vermont Dairymen's Association measured up to its possibilities?" Mrs. George Ware of Brattleboro responded.

Mrs. Ware declared that the Auxiliary had considerable work in sight, but that it had undoubtedly accomplished a great deal in advancing the work of the Dairymen's Association. It had, in no small way strengthened the dairymen in that it did a great deal towards influencing the members of the Association to attend meetings and take an active interest in its affairs.

Mrs. T. G. Bronson of Hardwick, responded to the question, "How Shall We Solve the Hired Help Problem?" She proposed as a partial remedy at least, a proper respect and solicitude for the feelings and welfare of servants and fair pay. Working servants unreasonable hours was something to avoid to get the best results, she thought.

The chairman then called on Mrs. R. Galusha of Framingham, Mass., formerly of South Royalton, to give "The Home Makers' Ten Commandments" and she supplied four. Don't worry, don't hurry, be patient and above all other things remember that cleanliness is next to godliness, were the substance of her remarks.

Failing to receive a response to "Woman's Progress," and "What Means do you Suggest for Improving the Schools of Our State?" the chairman called upon Mrs. Anna Dodge of Morrisville to answer. "Has the Woman's Auxiliary been a Benefit or a Drawback to the Dairymen's Association?" She was of the opinion that it had been a distinct benefit in that it had stirred up enthusiasm among dairymen, was instrumental in increasing ts membership and in innumerable other ways had helped to advance its interests.

The chairman then declared an intermission of fifteen minutes in order to give the secretary time to enroll new members and attend to routine business. It was announced that the initiation fee was 25 cents. Six new members joined.

Mrs. Mary Clark of Williston, then answered the question "What Shall We Read?" Cheap trash such as yellow-back novels should not be permitted in the home, she said. She advised the members of the Auxiliary to read history and gave a list of books along this line recommended by standard authorities.

Mrs. E. L. Page of Barre, then spoke on the number of societies that a busy woman could belong to profitably. She said that every dairyman's wife should belong to the Auxiliary, to some church organization and a literary society, if possible. Women could also spend their time profitably with sewing societies. Mrs. Charlotte Roberts of Wallingford, then gave a recitation in place of the vocal solo, which was scheduled; Misses Ellen Osgood and Winifred Gero then gave banjo and mandolin solos, after which the following officers were elected: President, Mrs. Mary Smith of Morrisville; Vice President, Mrs. C. C. Gates of North Hartland; Secretary-Treasurer, Mrs. Edna S. Beach of Charlotte. Meeting was then closed.

A special meeting was called by the President at 1:15 P. M. Thursday, for the purpose of introducing a resolution regarding a nominating committee, also to make some suggestions for our next year's meeting.

EDNA S. BEACH, Secretary.

LIST OF MEMBERS OF WOMAN'S AUXILIARY.

Mrs. Margaret M. Reed	Burlington
Mrs. Mary H. Pitkin	Marshfield
Mrs. Carrie A. Nelson Shackford	Ryegate
Mrs. Annie Dodge	Morrisville
Mrs. Mary A. Smith	Morrisville
Mrs. D. D. Howe	Burlington
Mrs. Mary R. Ralph	Brookfield
Mrs. A. L. Walker	South Woodstock
Mrs. Elinor T. Clark	Brookfield
Mrs. E. P. Carpenter	Waterford
Mrs. S. J. Hastings	Passumpsic
Mrs. F. S. Collins	Burlington
Mrs. George Crane	Wilmington
Mrs. C. J. Bell	Hardwick
Mrs. L. R. Jones	Burlington
Mrs. C. M. Winslow	Brandon
Mrs. J. O. Sanford	Stamford
Mrs. Mary Kibbe	Brookfield
Mrs. Louis W. Clark	Brookfield
Mrs. A. B. Manchester	Randolph
Mrs. T. F. Betterly	West Brattleboro
Mrs. C. H. James	Cornwall
Mrs. Alvira A. C. Ware	Brattleboro
Mrs. Sarah J. R. Whitman	Brattleboro
Mrs. C. D. Hazen	Wilder
Mrs. Jennie Bronson	East Hardwick
Mrs. Ida M. Pierce	Brattleboro
Mrs. Jennie L. Brock	Barnet
Mrs. F. L. Smith	Fletcher
Mrs. M. W. Clark	Williston
Mrs. John Smith	Newbury
Mrs. Jennie S. Bentley	St. Albans
Mrs. M. A. Curtis	Georgia
Mrs. M. B. Fuller	Georgia
Mrs. C. E. Martin	Rochester
Mrs. E. W. Smith	East Berkshire
Mrs. E. R. Towne	Waterbury
Mrs. R. B. Galusha	South Royalton

Mrs. H. M. Crane	St. Albans
Mrs. O. T. Sunderland	Georgia
Mrs. M. L. Aseltine	North Fairfax
Miss Elma Eldred	Sheldon
Mrs. E. M. Denney	Montpelier
Mrs. Fanny M. Drew	St. Johnsbury
Mrs. C. H. Higgins	St Johnsbury
Mrs. Alma F. Waters	St. Johnsbury
Mrs. Mary A. Brackett	St. Johnsbury
Mrs. Bessie H. Strong	North Pomfret
Mrs. S. A. Vail	Randolph
Mrs. I. C. Houghton	Lyndon
Mrs. L. F. Bickford	Bradford
Mrs. L. H. Davis	Barre
Mrs. J. E. Bass	Randolph
Mrs. Edward C. Smith	St. Albans
Mrs. Jennie S. Wood	Winchester, N. H.
Mrs. Sophia B. Craddock	Brattleboro
Mrs. Ella A. Eames	Brattleboro
Mrs. Almira L. C. Robbins	Brattleboro
Mrs. Susan F. Lowe	Brattleboro
Mrs. H. D. Thayer	Brattleboro
Mrs. M. I. Reed	Vernon
Mrs. W. C. Cushing	Vernon
Mrs. A. A. Mason	Townshend
Mrs. E. B. Batchelder	Townshend
Mrs. Callie S. Talcott	Williston
Mrs. T. H. Lyster	St. Johnsbury
Mrs. M. B. Leach	Essex
Mrs. W. S. Hastings	St. Johnsbury
Mrs. J. A. Leary	Jericho
Mrs. P. B. B. Northrop	Sheldon
Mrs. W. H. Whitcomb	Jericho
Mrs. Isadora A. Candon	Pittsford
Mrs. Mary H. McCormick	Rutland
Mrs. Etta W. LePage	Barre
Mrs. Winnifred Sprague	East Brookfield
Mrs. Ida H. Reed	Shelburne
Mrs. G. E. Davidson	Newfane
Mrs. A. Elizabeth Sherburne	North Pomfret
Mrs. F. M. Bigelow	Essex
Mrs. Elizabeth B. Lund	Burlington
Mrs. Sarah J. Rice	Burlington
Mrs. Edna S. Beach	Charlotte
Miss A. M. Bell	East Hardwick

Mrs. Della J. Gile	Morristown
Mrs. Annette M. Sherwin	Hyde Park
Mrs. T. E. Donahue	Hinesburg
Mrs. D. G. Donahue	East Charlotte
Mrs. Lottie A. Terrill	Morrisville
Mrs. Sarah D. Coburn	East Montpelier
Mrs. Phœbe C. Adams	Stowe
Mrs. S. C. Pike	Marshfield
Mrs. J. A. Nesser	South Burlington
Mrs. Alice W. Colby	West Berlin
Mrs. J. A. Kelton	East Montpelier
Mrs. George Cochran	Ryegate
Mrs. E. C. Hillis	North Montpelier
Miss Mabel F. Coburn	East Montpelier
Mrs. J. A. Coburn	East Montpelier
Mrs. H. H. Templeton	East Montpelier
Mrs. Rogene E. Herrick	West Milton
Mrs. L. A. Gilman	Randolph Center
Mrs. F .W. Ayers	Essex
Mrs. C. W. Guernsey	Montpelier
Mrs. F. T. Hutchinson	Worcester
Mrs. A. C. Hall	Putnamville
Mrs. J. C. Peck	Morrisville
Mrs. Oliver Drew	South Burlington
Mrs. Alice M. Carpenter	Cambridge
Mrs. F. L. Russell	Shrewsbury
Mrs. C. J. Pameter	Montpelier
Mrs. H. Brown	East Montpelier
Mrs. Leonora H. Mimms	41 High St., St. Albans
Mrs. C. C. Gates	N. Hartland
Mrs. Cyrus A. Bump	W. Salisbury
Mrs. W. S. Haynes	Middletown Springs
Mrs. A. J. Haynes	12 E. Washington St., Rutland
Miss Nellie Barney	12 Liberty Ave., Rutland
Mrs. L. R. Burr	N. Clarendon
Mrs. Edward Nichols	Bridport
Mrs. D. K. Hall	Rutland
Mrs. W. O. Baird	Pittsford
Mrs. H. L. Winslow	N. Clarendon
Mrs. R. S. Wetmore	Pittsford

Members for 1904.

Mrs. W. S. Robie	Franklin
Mrs. Inez Scribner	Bennington
Mrs. F. B. Dutton	Woodstock

Members for 1905.

Mrs. F. W. Draper	Enosburg Falls
Mrs. R. S. Burnett	Bethel
Mrs. Anna Bellows	Panton
Mrs. C. L. Parmenter	9 Vine St., Montpelier
Mrs. Cora Bates	East Barre
Mrs. W. C. Nye	East Barre
Mrs. C. M. Howe	Barre
Mrs. H. C. Bruce	Sharon
Mrs. Geo. B. Walton	Montpelier
Mrs. W. E. Ducharme	Barre

Members for 1906.

Mrs. Adda F. Howie	Elm Grove, Wis.
Mrs. Emma Fox Candon	Pittsford
Mrs. Jennie Macomber	Shelburne
Mrs. A. D. Cochrane	Jericho

Members for 1907.

Mrs. C. M. Byington	Charlotte
Mrs. V. A. Irish	Enosburg Falls
Mrs. C. M. King	Benson
Mrs. C. W. Howard	Shoreham
Mrs. L. H. Sheldon	Fair Haven
Mrs. L. K. Osgood	Rutland
Mrs. C. O. Harvey	Shelburne
Mrs. H. W. Sargent	Brattleboro
Mrs. H. M. Farnham	East Montpelier
Mrs. Gertrude Whitcher	Groton, R. F. D. No. 3.
Mrs. Beach Beers	Charlotte

Members for 1908.

Mrs. Laura Crampton	
Mrs. H. B. Farmer	
Mrs. Lucinda Faucher	
Mrs. Alice E. Stannard	
Mrs. W. H. Chamberlin	
Mrs. P. O. Eddy	

EDNA S. BEACH, Secretary,
Charlotte, Vt.

LIST OF CREAMERIES AND CHEESE FACTORIES IN VERMONT,

1908.

Addison County.

Bridport	Edward Nichols Creamery
Bridport	Edward Nichols Cheese Factory
Bristol	Crystal Springs Creamery
Ferrisburg	Ferrisburg Co-op. Creamery
Lincoln	Lincoln Co-op. Creamery
Middlebury	Middlebury Co-op. Creamery
Middlebury	Farmingdale Cheese Factory
Monkton	Donahue's Creamery
New Haven	Beaver Glen Creamery
New Haven	Beaver Glen Cheese Factory
New Haven Mills	New Haven Mills Creamery
North Ferrisburg	Lewis Creek Creamery
Orwell	Clover Leaf Creamery
Orwell	Orwell Cheese Factory Co.
Panton	Panton Co-op. Creamery
Panton	Elgin Springs Creamery Co.
Salisbury	Lake Dunsmore Creamery
Shoreham	Shoreham Cheese Mfg. Co.
Shoreham	Red Clover Cheese Mfg. Co.
Shoreham	Batchelder & Snyder Creamery
Shoreham	C. F. Eddy's Creamery
Starksboro	Starksboro Creamery Co.
So. Starksboro	Green Mt. Cold Spring Co-op. Creamery
Weybridge	Reef Bridge Creamery
Vergennes	Vergennes Creamery

Bennington County.

Arlington	West Arlington Cheese Factory
Dorset	Dorset Cheese Association
Langrove	Mountain Lake Creamery Station

Manchester	Battenkill Cheese Factory
No. Rupert	No. Rupert Cheese Factory
Peru	Peru Cheese Company
Pownal	Pownal Valley Creamery
Rupert	Cloverdale Cheese Factory
Readsboro	Elgin Creamery
South Shaftsbury	Everest Bros. Creamery
West Rupert	Rose Cheese Factory
Winhall	Green Mountain Cheese Association
Winhall	Mountain Lake Creamery Station

Caledonia County.

Barnet	Barnet Creamery Association
Burke	Burke Creamery Co.
Danville	Danville Creamery
East Barnet	East Barnet Creamery Company
East Peacham	East Peacham Creamery Co.
East Hardwick	Lamoille Valley Creamery
East Hardwick	Montgomery's Creamery
Groton	Groton Creamery Company
Groton	Blue Mt. Creamery Co.
Lyndonville	Lyndonville Creamery Association
North Danville	North Danville Co-op. Creamery
Passumpsic	Passumpsic Creamery Co.
St. Johnsbury	Harry Scotts' Creamery
So. Walden	Lyndonville Creamery Ass'n
So. Peacham	So. Peacham Creamery Co.
Sheffield	Sheffield Co-op. Creamery Ass'n
So. Ryegate	So. Ryegate Creamery Co.
Walden	Noyesville Creamery
West Barnet	Mountain View Creamery

Chittenden County.

Westford	Cloverdale Creamery Station
Westford Hollow	Donahue's Creamery Station
Williston	Williston Co-op. Creamery
Williston	Winooski Creamery Co.
West Milton	West Milton Co-op. Creamery
Colchester	Colchester Co-op. Creamery
Charlotte	Lake View Creamery
Charlotte	A. R. White's Creamery
Essex Junction	Wm. B. Johnson's Creamery
Essex Junction	Donahue Bros. Creamery

Essex Center	Browns River Creamery
Hinesburg	Chittenden County Creamery Co.
Hinesburg	Valley Falls Creamery Co.
Hinesburg	McDonough Cheese Factory
Huntington	J. W. Johnson's Creamery
Huntington Center	G. M. Norton & Co. Creamery
Jericho	Lyndonville Creamery Co.
Jericho	Standard Creamery Co.
Milton	Donahue's Creamery
Milton	Milton Bow Cheese Factory
Richmond	Bordon's Condensed Milk
Richmond	Jonesville Creamery Association
Shelburne	Shelburne Co-op. Creamery
Underhill	Underhill Creamery
Underhill	Underhill Co-op. Creamery

Franklin County.

Bakersfield	Sunset Creamery
West Berkshire	Vt. Clover Creamery Co.
East Berkshire	Marcey's Creamery
East Berkshire	B. Comb's Creamery
Enosburg Falls	Enosburg Falls Creamery
Enosburg Falls	Owls Head Creamery Co.
Fairfax	Fairfax Creamery
Fletcher	Clover Leaf Creamery
Georgia	Standard Creamery Co.
Highgate	Highgate Creamery
Montgomery	Crystal Falls Creamery
Oakland	Gem Creamery
St. Albans	Franklin County Creamery
Sheldon	Capitol Creamery
Sheldon Junction	H. P. Hood & Co.
Swanton	Swanton Creamery

Essex County.

Concord	Trout Brook Creamery Co.
Gallups	Gallups Creamery Co.
Lunenburg	Lunenburg Co-op. Creamery

Grand Isle County.

Albany	Albany Co-op. Creamery
Grand Isle	Sampson Co-op. Creamery

Grand Isle	Grand Isle Co-op. Creamery
North Hero	North Hero Creamery Co.
South Hero	South Hero Creamery Ass'n

Lamoille County.

Elmore	Lake Elmore Creamery Co.
Cambridge	H. P. Hood & Sons
Johnson	Lyndonville Creamery Ass'n
Morrisville	Jackson Creamery Co.
Stowe	Mt. Mansfield Creamery
Walcott	Riverside Creamery

Orange County.

Braintree	Snowville Creamery
Bradford	Lyndonville Creamery Ass'n
Brookfield	C. Brigham Co. Station
Chelsea	Orange County Creamery
Chelsea	Orange County Creamery Ass'n
Corinth	Corinth Creamery Co.
East Thetford	H. P. Hood & Sons
East Corinth	East Corinth Creamery Co.
Fairlee	H. P. Hood & Sons
North Randolph	North Randolph Co-op. Creamery
North Randolph	North Randolph Co-op. Creamery
North Thetford	North Thetford Creamery
Randolph	Randolph Co-op. Creamery
Randolph	C. Brigham Co.
Randolph Center	Geo. H. Temple Creamery
Strafford	Strafford Creamery Co.
Topsham	Co-operation Creamery Co.
Tunbridge	Tunbridge Creamery Co.
Washington	Washington Creamery Ass'n
Wells River	Wells River Creamery Ass'n
West Topsham	Green Mt. Creamery Co.
Williamstown	Lyndonville Creamery Co.
Williamstown	E. J. Poor's Creamery
E. Corinth	Farmer's Creamery Co-op.

Orleans County.

Albany	J. G. Turnbull Creamery Co.
Barton	Crystal Lake Creamery
Barton Landing	J. G. Turnbull Co. Creamery

Craftsbury	Black River Creamery
Coventry	J. G. Turnbull Co. Creamery
Charlestown	Clyde River Creamery
Derby	J. G. Turnbull Co. Creamery
Evansville	Evansville Creamery
Glover	Lyndonville Creamery Ass'n
Greensboro	Caspian Lake Creamery
Holland	Holland Creamery Co.
Irasburg	Jersey Star Creamery
Lowell	J. G. Turnbull Co. Creamery
Newport	Eureka Creamery Co.
Newport Center	J. G. Turnbull Co. Creamery
North Craftsbury	Mill Village Creamery Co.
South Troy	J. G. Turnbull Co. Creamery
Troy	Eureka Creamery Co.
West Charlestown	J. G. Turnbull Co. Creamery
West Glover	Meadow Brook Creamery

Rutland County.

Benson	Benson Creamery
Benson	Maplehurst Creamery
Chittenden	East Pittsford Cheese Factory
Clarendon	C. Brigham Co. Station
Danby	C. Brigham Co. Station
Danby Four Corners	C. Brigham Co. Station
East Poultney	East Poultney Cheese Factory
East Wallingford	C. Brigham Co. Station
Hubbarton	Gilt Edge Cheese Factory
Hubbarton	Capitol Creamery
Healdville	A. W. Crowley's Cheese Factory
Ira	Riverside Cheese Factory
Mt. Holly	Tarbleville Cheese Factory
Mt. Holly	Mt. Holly Cheese Factory
Middletown Springs	Chas. M. Bull Creamery Co. Station
Pittsford	Rutland County Creamery
Pawlet	Park View Cheese Factory
Pawlet	Clovervale Creamery
Proctor	Proctor Creamery
Poultney	Hudson Valley Creamery
Poultney	Borden's Condensed Milk Co.
Rutland City	Rutland Creamery Co.
South Wallingford	C. Brigham Co. Station
Shrewsbury	Gleason's Cheese Factory
Shrewsbury	R. E. Plumley's Cheese Factory

Shrewsbury	W. E. Aldrich Cheese Factory
Sudbury	Otter Creek Creamery
Wallingford	C. Brigham Co. Factory
West Rutland	Smithlawn Cheese Factory
Wells	Lewisville Cheese Factory
Wells	Eureka Cheese Factory
Wells	Cold Springs Cheese Factory
Tinmouth	C. Brigham Co. Station
Tinmouth	Tait Bros. Factory
Pawlet	Blakely's Cheese Factory
Pawlet	Tait Bros. Factory

Washington County.

Barre	Barre City Creamery
Middlesex	Middlesex Creamery
Calais	East Calias Creamery Co.
Marshfield	Marshfield Co-op. Creamery Co.
Barre	Cobble Hill Creamery
Northfield	A. E. Bryant
Moretown	Cold Spring Creamery
Waitsfield	Mad River Valley Co-op. Creamery
Waterbury	E. R. Towne & Co. Creamery
Waterbury	Winooski Valley Creamery Ass'n
Montpelier City	Crescent Creamery Co.
Montpelier City	Montpelier Creamery
Plainfield	Plainfield Co-op. Creamery
East Montpelier	East Montpelier Co-op. Creamery
North Montpelier	North Montpelier Co-op. Creamery
Cabot	Cabot Creamery Co.
Warren	Warren Co-op. Creamery Co.

Windham County.

Newfane	Windham Co. Creamery Ass'n
Putney	Putney Creamery
Westminster	Valley Creamery
Wilmington	Deerfield Valley Creamery Ass'n
Brattleboro	Brattleboro Creamery Ass'n
Wardsboro	Branch of Newfane Creamery
Londonderry	Londonderry Cheese Factory
South Londonderry	Mount Lake Creamery
Whitingham	North River Creamery Ass'n
Dummerston	Dummerston Creamery

Windsor County.

Rochester	Standard Creamery Co.
Chester Depot	C. R. Hazen Creamery
Chester Depot	Chester Cheese Co.
Barnard	Silver Lake Creamery
East Barnard	Clover Valley Creamery
Norwich	H. P. Hood & Sons Creamery
Pomfret	Sherburne Creamery Prop.
Sharon	Sharon Co-op. Creamery
Cavendish	Batchelder & Snyder Co.
Bethel	Harrington Creamery
East Bethel	Storrs Creamery
Windsor	Hillside Creamery
Weston	Weston Cheese Factory
Plymouth	Plymouth Cheese Factory
South Reading	South Reading Cheese Factory
Woodstock	H. P. Hood & Sons Creamery
Pomfret–P. O. Woodstock	Cloudland Creamery
West Windsor	West Windsor Cheese Mfg. Co.
West Hartford	West Hartford Creamery Corporation
West Hartford	Howard's Creamery Prop.
Hartland	Hartland Creamery
Hartland Four Corners	Brookside
Royalton	S. & F. Creamery
S. Royalton	Richardson Creamery
S. Royalton	Waldo Creamery

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FIFTH ANNUAL REPORT

OF THE

Vermont

State Horticultural Society

PROCEEDINGS

OF THE

Thirteenh Annual Meeting

Held at Burlington

DECEMBER 3 and 4, 1907.

Monotyped
AND
PRINTED
BY

The P. H. Gobie Press,
Bellows Falls, Vt.

LETTER OF TRANSMITTAL.

To His Excellency F. D. Proctor, Governor of Vermont:

Dear Sir:—In accordance with the requirements of law, I have the honor to transmit to you the Fifth Annual Report of the Vermont State Horticultural Society.

Respectfully,

WILLIAM STUART,

Secretary.

OFFICERS OF THE VERMONT STATE HORTICULTURAL SOCIETY.

PRESIDENT.

T. L. Kinney........................South Hero, Vt.

COUNTY VICE-PRESIDENTS.

Addison	E. L. Wright, Middlebury
Bennington	
Caledonia	
Chittenden	C. E. Gove, Burlington
Franklin	H. K. Brooks, Swanton
Grand Isle	D. T. Trombly, Isle La Motte
Lamoille	Geo. H. Terrill, Morrisville
Orange	Dana Morse, Randolph
Orleans	W. E. Robinson, Newport
Rutland	D. C. Hicks, No. Clarendon
Washington	J. A. Parker, Waterbury
Windham	A. A. Halladay, Bellows Falls
Windsor	Geo. W. Perry, Chester Depot

SECRETARY.

Wm. Stuart........................Burlington, Vt.

TREASURER.

A. M. Vaughan........................Randolph, Vt.

AUDITOR.

L. H. Sheldon........................Fair Haven, Vt.

EXECUTIVE COMMITTEE.

T. L. Kinney	So. Hero
E. S. Brigham	St. Albans
W. Stuart	Burlington
G. H. Terrill	Morrisville
F. E. Foote	Middlebury

CONSTITUTION OF THE VERMONT STATE HORTICULTURAL SOCIETY.

ARTICLE I.

Name—This Society shall be known as the Vermont State Horticultural Society.

ARTICLE II.

Object of the Society—The object of this Society shall be for the purpose of improving the condition of pomology and other branches of horticulture, and disseminating correct information concerning the culture of such fruits, flowers, trees, and other productions in horticulture as are adapted to the soil and climate of Vermont.

ARTICLE III.

Membership—Any person may become a member by paying the secretary or treasurer an annual fee of fifty cents or a life member upon the payment of five dollars.

Honorary members for a time stated or for life may be elected at any annual meeting by a two-thirds vote of the members present.

ARTICLE IV.

Officers—The officers of the Society shall consist of president and one vice-president from each county of the State, a secretary and treasurer, an auditor, and an executive committee composed of the president, secretary and three additional members to be elected by the Society at each recurring annual meeting.

ARTICLE V.

Duties of the president and vice-presidents—It shall be the duty of the president to preside at and conduct all meetings of the Society, and deliver an annual address. In the absence of the president this duty shall devolve upon the vice-presidents in their order. It shall be the duty of the vice-presidents to assume general supervision of the horticultural interests of their county, and shall make written report of the same to the Society at its annual winter meeting.

ARTICLE VI.

Duties of the secretary—The secretary shall record all the proceedings of the Society, collect and prepare all communications for the public press, and pay over all moneys received from members or otherwise to the treasurer on his receipt; receive and answer all communications addressed to the secretary, and, as an executive officer, aid the president in the dispatch of business relating to the meetings of the Society.

ARTICLE VII.

Duties of the treasurer—The treasurer shall collect and hold all funds of the Society and pay out the same only on the order of the president, countersigned by the secretary. He shall make up a report of all the receipts and disbursements of the society and present the same at the annual winter meeting or at any other time when called upon to do so by the executive committee. He shall give bonds in such sum as the Society may direct, to be approved by the president and secretary, and the bond when so approved shall be filed with the State Auditor.

ARTICLE VIII.

It shall be the duty of the auditor to examine the books of the treasurer and report same to the State Treasurer.

ARTICLE IX.

Election of officers—The officers of the Society shall be elected annually by separate ballot and shall hold their offices until their successors are elected.

ARTICLE X.

Meetings of the Society—The Society shall hold their annual sessions at such time and place as seems best to the executive committee.

ARTICLE XI.

Amendments—By-laws and alterations of the constitution may be enacted by a vote of two-thirds of the members present at any regular annual meeting, one day's notice of the same being given.

Among the public acts passed by the 1904 General Assembly of the State of Vermont was one entitled "An act to promote the Horticultural interests of Vermont," which is as follows:—

No. 15.

AN ACT TO PROMOTE THE HORTICULTURAL INTERESTS OF VERMONT.

It is hereby enacted by the General Assembly of the State of Vermont:

Section 1. The sum of five hundred dollars ($500.00) is hereby appropriated annually to the Vermont State Horticultural Society for the purpose of promoting, encouraging and developing the horticultural interests of the State.

Sec. 2. The auditor of accounts is hereby directed to draw an order on the State treasurer in favor of the treasurer of the Vermont State Horticultural Society for the first payment of this appropriation on the second day of January, 1905, and annually thereafter so long as the conditions hereinafter provided shall be complied with.

Sec. 3. Said Vermont State Horticultural Society shall hold an annual meeting, of at least two days' duration, at some town or city in the State which is easy of access to the people and in some convenient and suitable building. At said meeting men of horticultural note shall be engaged to teach and discuss the best methods of fruit, vegetable and flower culture, as well as the handling and marketing of the product. At the said annual meeting premiums not to exceed one hundred dollars shall be offered for the best exhibits of fruits, vegetables, and flowers, said premiums to be awarded by disinterested and expert judges, and paid by the treasurer of the Vermont State Horticultural Society.

Sec. 4. The *treasurer* of the Vermont State Horticultural Society shall on or before *January* 1, 1907, and annually thereafter, make a detailed and itemized account to the State auditor or accounts of the receipts and expenses of said Society, which accounts shall be approved and countersigned by the *secretary* and auditor of said Society.

Sec. 5. If in any year it shall appear to the State auditor of accounts that any part of the preceding annual appropriation has been injudiciously expended, then such part or amount may be deducted from the order for the ensuing annual appropriation.

Sec. 6. The report of the annual meeting of the Vermont State Horticultural Society shall be published by the State Board of Agriculture in their annual report as provided in section two hundred forty-seven of Vermont Statutes.

Sec. 7. This act shall take effect from its passage.

Approved December 9, 1904.

This act will enable the Society to provide more interesting meetings, by securing the best speakers available, and also insure the publication of its proceedings, thereby disseminating the knowledge brought together at these gatherings.

LIST OF MEMBERS OF THE VERMONT STATE HORTICULTURAL SOCIETY.

Aitken, George	Woodstock
Allen, Mrs. H. D	So. Hero
Allen, Ray L	So. Hero
Ballard, S. S	Montpelier
Barrows, E. B	Brattleboro
Blakeley, Geo. H	St. Johnsbury
Brigham, E. S	St. Albans
Bristol, R. H	Vergennes
Bristol, E. S	Vergennes
Browne, E. C	Burlington
Brooks, H. K	Swanton, R. F. D.
Cady, C. G	Middlebury
Cady, W. M	Middlebury
Clough, G. A	East Braintree
Crawford, H. H	Williston
Davis, F. L	No. Pomfret
Dodds, W. B	No. Hero
Dunsmore, G. H	St. Albans Bay
Dunning, D. B	Winooski
Fay, P. J	Shelburne Farms
Fisk, N. W	Fisk
Foote, L. B	Middlebury

Foote, F. E	Middlebury
Gage, Merlon P	Greenport, (L. I.) N. Y.
Gebicke, A	Burlington
Gordon, Mrs. S. P	Grand Isle
Gove, C. E	Burlington
Halladay, A. A	Bellows Falls
Halladay, G	Bellows Falls
Hemenway, R. L	Bridport
Hewitt, H. H	Bristol
Hicks, D. C	No. Clarendon
Hill, A. H	Isle La Motte
Hills, Prof. J. L	Burlington
Hitchcock, E	Pittsford
Hitchcock, Stanton E	Newport
Horsford, F. H	Charlotte
Holcomb, W. C	Burlington
Jacobs, H. B	Vergennes
James, C. S	Middlebury
Jones, Prof. L. R	Burlington
Kinney, T. L	So. Hero
Landon, A .E	So. Hero
Landon, T. B	So. Hero
LePage, Mrs. Chas	Barre
Lewis, A. A	Burlington
Miller, F. H	Halifax
Miller, Arthur L	East Dummerston
Miller, J. A	East Dummerston
Morse, D. H	Randolph
Ormsbee, C. O	Montpelier
Otis, C. W	Middlebury
Parker, J. A	Waterbury
Peck, Cassius	Burlington
Perry, G. W	Chester Depot
Phelps, W. N	So. Hero
Powers, H. S	Ryegate
Putnam, Luther	Cambridge
Richards, W. N	Vergennes
Robinson, W. E	Newport
Robinson, Mrs. W. E	Newport
Russell, Carl L	Norwich
Sheldon, L. H	Fair Haven
Small, F. M	Morrisville
Smith, C. F	Morrisville
Smith, S. W	Addison
Stevens, J. McLean	Orwell

Stuart, Wm.	Burlington
Sumner, Chas, D	Middlebury
Talcott, L. H.	Williston
Talcott, F	Williston
Taylor A.	Burlington
Terrill, G. H	Morrisville
Totman, H. M	Randolph
Tracy, W. W.	Dept. Agr., Washington, D. C.
Trombly, D. T.	Isle La Motte
VanAllen, E. G	Brattleboro
Vaughan, R. E	Burlington
Vaughan, A. M.	Randolph
Waugh, F. A	Amherst, Mass.
Weeks, W. F.	Shelburne
Wells, Arthur R.	Newport, R. F. D. 1
Whitford, L. G.	Vergennes
Whitney, S. B	Enosburg Falls
Wiltfanck, F	So. Hero
Wright, E. L.	Middlebury
Wright, Geo. H.	Middlebury
Wright, H. J.	Middlebury

ADDRESS OF WELCOME.

By MAYOR W. J. BIGELOW.

Mr President, Ladies and Gentlemen:

It certainly is a genuine pleasure to speak a word of welcome to you at the opening of your gathering here in behalf of the city of Burlington. One of the best assets of our city is the facilities it possesses for the entertainment and the meeting of the different State organizations here. We appreciate it, not only because it brings visitors here and so brings an amount of business for our hotels and other institutions where they entertain people, but it brings to us the leaders and the progressive people in all the different lines of activity in which modern society is engaged, and in that way it keeps us in touch with the progress of the world in a way that would be possible in no other manner.

I notice your program says that you are to devote considerable attention to the ethical side of the horticultural business. I thought perhaps that referred to this year's apple crop, because when I got the price of mine I thought there must be something ethical about it.

The Vermont Horticultural Society is to be congratulated upon one thing at least. You know Vermont has lost its prestige largely as a horse market; it has ceased to be a great beef producing country; Vermont maple sugar even is received with some suspicion, and the Vermont turkey, they say, is grown largely outside of Vermont, but the Vermont apple, with its flavor and quality has never yet been adulterated or matched by any other section of the country, and you are to be congratulated that you have such an exclusive thing to keep. You are not only to be congratulated, but it places upon you a responsibility to maintain, as far as possible, the high standard which Vermont fruit enjoys.

In looking over this exhibit of fruit, my mind has been carried back to what I knew of the apple business when I lived on the farm, and the contrast is very striking. Of course, I was raised in the central part of the State, and there the matter of raising fruit was not made a special business. Each man who had land that he thought was adapted to the raising of apples, set out a certain number of trees and instead of cultivating them and trying to develop the apple, he left them to take care of themselves, and the result was what you all know as well as I,—that once in a while a year would come, in which we would get a lot of apples, and some years not enough for one's own use; so the high prices of the "off" year would be of no benefit to the farmer, because his trees didn't produce any fruit. But it is evident that all of that has been changed by the people who have made a specialty of the fruit business,—with the development of science also in the spraying of trees and the care of the fruit, this exhibit is possible today. It makes the fruit crop a more staple crop, a more sure source of income. I think that is another reason of congratulation.

My only personal experience in the fruit business is this: At the end of my first year in college, I received an injury, during the vacation, and was obliged to travel on crutches, and then the same as now, I felt the need of a little cash for accruing expenses. I knew of a neighbor who had set out a fine young orchard and who had gathered quite a crop of apples that year. The thought came to me that perhaps I could get him to send some of his fruit to the Boston market and get a little commission for doing the business to help me out a little and get him connected with a good market. So I wrote to a man in business in Boston and got directions about shipping the fruit and went to this neighbor and told him what I could do, and that if he wanted to try it I would be glad to help him to get some of his apples to the Boston market. He took considerable pains and carried out the instructions as well as he could and the result was that he prepared several barrels for market and we shipped them off. In due time the returns came and when we deducted the freight and the cost of the barrels, I didn't have the face to ask him for a cent of commission. The difficulty was this, while the man was thoroughly honest and honorable and doing the best that he knew how, he didn't understand what the market required, and instead of getting to the market a number 1 apple or an extra good apple, the apples were number 2's and it happened it was one of the years when apples were plenty and prices were low, and the result was that so far as I know there has never been another barrel of apples shipped from that town to Boston markets. So, with that experience of mine you will see that I am not very well qualified to tell you anything about the raising of apples.

There are just one or two suggestions that I would like to make to you. In the first place, I want to say that a little over a year ago, I had the pleasure of visiting the orchards of the president of your society, and it was a great pleasure to me, to see that orchard and the way it was taken care of and the method pursued in raising fruit. After looking the orchards over I felt something like the man did who was asked what he thought of the character of Rip Van Winkle in the play. He said it seemed as though after any body had seen Joseph Jefferson act the part of Rip Van Winkle that anybody could act it. And so after looking at the orchards of your president and seeing how he conducted business, it seemed as if anybody could raise good apples; but still we realize that is more easily said than done; that the raising of fruit is a business in itself. And that brings to mind another suggestion that I wanted to make, and that is, I believe it should be the duty of the Vermont fruit growers to try to interest young men in this business; to grow up in it and develop in it, rather than to try to get the farmers who have reached middle age or past that, to develop the apple crop themselves. They are almost sure to meet with such an experience as the one I have related, and of course a man at that age hasn't the time to give to the development of a business. If you would bring the attention of the young men to this business; if you can get them to take up the study of fruit growing as a life's business and make that the leading feature of their agricultural operations, it seems to me we will be sure to see great progress in the fruit business in Vermont.

Only one other suggestion, and that is the help problem. I feel that owing to the readjustment that seems inevitable in the industrial life that we will see a greater abundance of help in the next two or three years than we have had in the past five years. But during that time, when help is plenty, it should be the object of the different agricultural organizations to consider the matter of securing help when help is scarce and prices high. The only suggestion that I can make in regard to that is, I believe that the fruit growers and the farmers and all people engaged in agricultural pursuits in Vermont must study up some system of co-operation in the matter of securing help. There are plenty of laborers coming to our country every year, millions of them, but we can't get them back on the farms, and even should we get them to come to the farms singly, unable to speak our language and unaquainted with our farming methods they would be entirely worthless to us. But I think it would be possible if the people would get together and devise some way of co-operation by which they could bring a colony of foreign workers into an agricultural district or community and let them work together and learn the farming trade together, that you might get foreign help engaged in farm labor to a greater extent than has ever been done before. So far as I know that idea has never been suggested before. It is one that came to me in thinking about the agricultural problems and I submit it to you simply for what it is worth. I don't ask you anything for it, but I would ask you to think about it and see if there isn't some way possible by which the necessary amount of help to carry on the different agricultural undertakings in the State may be secured.

I hope, ladies and gentlemen, that your meeting here will prove a very pleasant and a very profitable one, and I hope that the suggestions that are made to you will not only develop the ethical side but develop the practical side. I hope that you may be able to do what I have suggested in bringing the attention of the young men to this line of business as a life work and in that way materially aid the development of the horticultural business in Vermont.

RESPONSE BY T. L. KINNEY, PRESIDENT.

Mr. Mayor, Ladies and Gentlemen:

I have been called upon to respond to this address of welcome, and while I understand it is quite an undertaking to follow remarks so generously given by His Honor, the Mayor, in the way of welcome to our Society, to the City of Burlington, yet I must say that it gives me the greatest of pleasure to respond.

The first time this organization held a meeting it was up on the hill here in Burlington, and I had the honor of being its president at that time; our address of welcome was not given by the Mayor of Burlington, in fact, I don't remember who gave it, but I think some one interested in the work of the college. There were a few of us gathered there, and as I look back, and think over the history of the Society from that day to this, and enumerate the different places in the State we have met, and the words of welcome we have received, it gladdens my heart to note the progress made along the different lines, and the wonderful degree of attention we have received from persons from all parts of the State which has resulted in our aid and benefit. I cannot help but rejoice to stand here today and respond to the cordial welcome of your Mayor. It is a privilege indeed to have the use of this convenient hall to contribute to the success of our meetings, as well as other facilities offered by the city of Burlington. We, as a Society, are always glad to visit Burlington with her historic lake, broad streets, beautiful churches and parks, growing more beautiful every year. You are beautifully situated in the very center of the Champlain valley, with its wealth of apple bearing land, on either side of the lake, and there should be today in this city, a distributing plant. Because such a plant is not here our Society is injured and every barrel of fruit except a few that land in Rutland, is taken over into the State of New York, Troy, New York City, Philadelphia, Baltimore and Chicago, to find a resting place from the time they are picked from our trees until the consumer uses them on his table. This fruit should all be held here in this city in a cold storage plant until the market is ready for it. I see no reason why Burlington should not furnish a cold storage equal to that at Niagara Falls, the largest one in the world. I will not complain that this has not been done before; we have seemingly done all we could, but that is what we are going to do; that is what Burlington is going to help us to do,—erect a storage plant to hold not only what we now grow, but the millions of barrels we are going to grow in the years to come. The State of Maine, which thirteen years ago was behind Vermont in the production of fruit, not raising enough to furnish the Boston market, today is shipping apples all over the world; they have a fruit market that is immense; Maine picked over two million barrels of apples this year. Here in Vermont we have the soil and the experience. We need more orchards; we need more men who are willing to give more time to the growing of apples than to the lines of making sugar and dairying and the breeding of horses. We need men with the single interest of apple growing.

I was in hopes the Mayor would speak of a statute for the protection of the apple grower as well as for the consumer. We want a law that will compel the honest packing of fruit enacted by the coming legislature, and we want the Burlington friends to help us secure such a law.

In regard to packing, let us try, as a Society, to conduct our business so that we may improve along this line, and also educate our boys so that they may do better work than we have ever dreamed of. We must educate our boys to take up our work, for our race is nearly run, and they should do the work we leave even better than we have done it. We need to take courage and will when we learn that where there was one boy studying horticulture at the time this Society commenced its career, now there are 12 or 15; in Massachusetts where there were 25 there are now 100; not only the boys who are going to toil with their hands but those who wish to understand the science, the principles of fruit growing that everyone must understand in order to have full success. Let us look more carefully into the education of our young men along this line.

REPORT OF THE SECRETARY.

While the past year has, on the whole, been a fairly satisfactory one for the Society, the increase in membership is not commensurate with the efforts put forth to make the meetings attractive, or with the possibilities of fruit growing in the State.

Since our last report fifteen new names have been added to our list and eleven old members have been dropped from the roll for non-payment of dues. This gives us a net gain of four members, or a membership roll of eighty-four. During the year twenty-three dollars and fifty cents have been received in membership dues.

The report of our last meeting was duly published and distributed to the members of the Society. In September a printed leaflet containing instructions for the selection of exhibition fruit was mailed to each prospective exhibitor, chiefly for the purpose of reminding them to make plans for attending this meeting and of bringing with them an exhibit of fruit.

Within the current year two New England horticultural societies, Massachusetts and Maine, have requested this Society to send a delegate to their meetings for the purpose of participation in a discussion as to the desirability of securing greater uniformity in the grading and marking of fruit, more particularly of apples. Mr. Kinney has represented this Society at both of these meetings. Inasmuch as the Connecticut Horticultural Society is contemplating the same thing, viz—of inviting delegates from all the other New England Societies, it seems desirable, at least to your secretary, that this Society should give some expression of its feeling regarding this movement, and of the desirability or profitableness of sending delegates to these meetings. An opportunity for such expression will be offered when the discussion regarding "The Desirability of National Fruit Inspection Laws" comes up.

Your secretary again wishes to remind you that the membership of the Society can only be materially increased by the hearty co-operation of all its members. Let us each pledge ourselves to secure one new member during the coming year.

WM. STUART,
Secretary.

Upon motion of Mr. Sheldon, seconded by Mr. Vaughan, the report was accepted as read.

Song, (Original) "Lovely Lake Champlain",
by "Professor" Phelps.

Report of the Secretary.

REPORT OF TREASURER.

Vermont State Horticultural Society Expenditures.

1906.	Warrant No.	
Dec. 6	115—A. M. Vaughan	$ 6.10
Dec. 6	95—R. E. Vaughan	6.00
Dec. 17	93—E. S. Brigham	6.85
Dec. 17	94—H. Kibbee Brooks	3.78
Dec. 17	96—W. H. Blodgett	24.00
Dec. 17	97—A. A. Halladay	9.30
Dec. 17	98—R. Brodie	5.00
Dec. 17	99—Luther Putnam	21.50
Dec. 17	100—D. T. Trombley	6.00
Dec. 17	101—S. P. Gordon	8.00
Dec. 17	102—T. L. Kinney	5.75
Dec. 17	103—W. E. Holcomb	19.00
Dec. 17	104—A. H. Hill	5.00
Dec. 17	105—R. H. Bristol	5.00
Dec. 17	106—D. C. Hicks	1.50
Dec. 17	107—Mrs. H. D. Allen	4.00
Dec. 17	108—J. A. Parker	1.00
Dec. 17	109—H. M. Totman	5.00
Dec. 17	112—J. H. Hale	19.92
Dec. 17	116—A. M. Vaughan	10.00
1907.	Warrant No.	
Jan. 11	113—A. G. Gulley	$13.85
Jan. 11	111—W. E. Robinson	8.40
Jan. 11	110—Van Ness House	21.50
Jan. 11	114—D. H. Morse	7.12
Jan. 11	117—H. M. Totman	3.95
Jan. 11	118—L. H. Sheldon	8.00
Feb. 26	119—D. C. Hicks	5.50
Feb. 26	120—Katherine R. Farrell	20.00

Mar.	14	121—Stella M. Chase	4.75
Mar.	23	122—T. L. Kinney	14.36
Mar.	23	123—Wm. Stuart	6.30
July	1	124—P. H. Gobie	21.00
July	1	125—Sheldon Press	1.75
Oct.	26	126—Sheldon Press	1.85
Dec.	3	A. M. Vaughan, postage	.97
			$312.00
		Cash on hand	300.30
			$612.30

Vermont State Horticultural Society Receipts.

1906.			
Jan.	5—Cash on hand	$ 88.80	
Jan.	5—Annual dues	16.50	
Jan.	17—Annual dues, G. A. Clough	.50	
1907.			
Jan.	11—State Appropriation	500.00	
Dec.	3—Annual dues	6.50	
		$612.30	$612.30

A. M. VAUGHAN,
Treasurer.

Upon motion of Secretary Stuart, duly seconded, the report was accepted as read.

REPORTS OF COUNTY VICE PRESIDENTS.

PRESIDENT KINNEY:—No man can go into the orchard under ordinary circumstances, in all seasons, and pick out specimens that are suitable to exhibit at our meeting; even though he may get good specimens, in shipping them here they may get damaged, and after arriving here the room may be too warm or too cold; in all events it is quite an expense to the exhibitor to make a show of his fruit; so we are glad to pay for that trouble. I wish that every member would endeavor to make the exhibit a finer one, a more complete one next year. We will now call for the reports of the vice presidents.

E. L. WRIGHT, ADDISON COUNTY.

There is certainly a growing interest in Addison county along horticultural lines, though it is very slow. R. L. Hemenway has gained marvelous results with modern methods in the last few years in his orchard in Bridport. He is the largest grower in the county and possibly has been the most successful in the last few years. Next in line are John Stevens, W. H. Noonan, George H. Wright and Sons, Cary Marshall and F. E. Foote, all realizing handsome profits from their orchards. Addison county is not a particularly large producing county as the men I have mentioned are the only ones raising five hundred barrels or more to my knowledge.

A year ago last spring Mr. Hemenway bought the first gasoline spraying outfit in the county. This last spring John Stevens of Orwell bought a gasoline sprayer, and George H. Wright and Sons bought a gasoline power machine. None of these machines are alike. Mr. Hemenway's is a Deyo machine while ours is a Fuller and Cooper. The Fuller and Cooper machine is made by a very small firm, but what they lack in education and money, they more than make up in mechanical ability, and their machine has some very pronounced advantages over the Deyo machine owned by Mr. Hemenway. He will tell you so himself. Next year I believe there will be two more machines bought in the county. I think Mr. Noonan of Addison and James Bros. of Weybridge and Cornwall will each buy machines. Of course when I say a man has put dollars and cents into a machine, I mean he is using it and not buying it as a farm ornament. We use ours to spray our potatoes as well as our apples with corresponding results. Also to run the separator and turn the grindstone, and will, eventually, to run the washing machine.

Mr. Hemenway, F. E. Foote and our company are planting extensive orchards each year and many more are planting a little more each year. C. S. James is experimenting with peaches and we are using the two varities of Japanese plums, the Burbank and Red June, as fillers in our young orchards. This last season has been a very hard one on young trees. Many winter killed and later dried up like the dairymen's cows during the drouth of July and August.

Mr. Hemenway and ourselves have resorted to buying our nursery stock in the fall, as we cannot get what we want in the spring. The varities used largely are Spys, Baldwin, and Greenings, though a few McIntosh Reds, Tolman Sweets, and others are set.

To my knowledge there is as yet no San Jose scale in the county. Though there are plenty of other pests and insects.

The crop of 1907 was fair in quantity but poor in quality. The really nice fruit coming from the sprayed and well cared for orchards as usual. The price received ran from $1.50 to $3.50 per barrel. There may have been a few sold for $4.00 but not but a few. There was a tendency early in the season for growers to stick for $4.00 per barrel and as a result a good many still have their apples and cannot sell them for even $2.00 a barrel.

Early potatoes were a failure owing to the drouth, but potatoes planted late came on wonderfully after the rains.

I understand that Mr. Drawlett, of Cornwall, had 1,000 bushels, that three others had five or six hundred. The county raises quite a good many potatoes, also onions. The onion crop was not up to the average this year for the same reason all crops were light—lack of water at the proper time.

On the whole I believe our county is waking up to the idea that the 20th century is here and we are well started on it and that if they are to keep in line they must adopt new methods and run their farms in an up-to-date manner.

W. E. ROBINSON, ORLEANS COUNTY.

The fruit and vegetable crop for this season in Orleans county was not up to the average in yield or quality. Especially is this true of the apple crop, which was almost a total failure in most of the orchards. There were no plums or cherries. Strawberries yielded a very full crop of good size and extra quality. Raspberries were also plentiful and good quality. Blackberries were nearly a failure, the few gathered being small and sour.

Vegetables did fairly well except tomatoes. The potato crop was very uneven. Some growers report good yields with little rot, while other reports were quite the reverse.

Prices for almost all kinds of produce were good, and on the whole, we consider the season as quite satisfactory.

D. T. TROMBLEY, GRAND ISLE COUNTY.

The spring of 1907 opened up very cold and continued so until very late and in consequence all varities of fruit were late in coming into blossom. The first apple blossoms that I saw open was on the 13th day of June, which is at least three weeks late, and consequently this shortened their growing period to such an extent that few varieties acquired their normal size. Most varieties were very small, not more than 25% of them being of standard size. The crop in the north end of the county, that is, Isle La Motte, North Hero and Alburgh, did not exceed 25% of a normal crop, but in the south end, South Hero and Grand Isle, they were more fortunate and as near as I can find out about it, a normal crop was gathered. Some lots were lumped, or sold on the trees. Such sales were generally in favor of the seller. I think such sales in some cases brought the seller four dollars per barrel for everything on the trees. I think the reason of this was that the fruit being bought early the buyers expected them to attain their normal size before picking time, and as they did not attain a marketable size the buyers got the worst end of the bargain. Some lots which were sold by the barrel brought from $2.50 to $2.75 for ones and twos, all varieties. Still other sales were made in which the grower realized from $3.00 to $4.00 for their number one fruit.

Spraying seems to be on the decline. Still some spray, but not enough. We were not troubled with apple scab, but the codling moth was very much in evidence, and in orchards that were not freely sprayed with paris green he left his mark. Some of our orchardists used the lime, sulphur, and salt wash for the scale louse, but with what results, I am unable to say.

There are still a few that use Bordeaux, but not enough. Very few spray more than once or twice, and in most cases paris green is added to the mixture. I believe that the reason that the farmers in general, do not get the desired effect from spraying is owing to the careless method in which the mixture is prepared. They may use the ingredients in the right proportion, but in many cases it is not mixed right. One particular case came under my observation in which one of our best farmers was making Bordeaux. He slacked the right amount of lime and dissolved the right amount of vitriol, but instead of diluting either to their proper consistency, what did he do but pour both lime and copper in the tank undiluted, intending to fill the tank with water afterward. Just then I happened along and told him that he was just throwing his material and time away mixing his ingredients in that way, and when I convinced him that he had not done the work right, he poured the stuff on the ground and prepared another batch in the proper way. As I have already stated, this man is a good farmer and wanted to do this work right, but he did not know how. The Experiment Station here at Burlington has sent out broadcast over the State, bulletins informing the farmers and orchardists just how to prepare Bordeaux, and if they do not know how, it is their own fault. I have in my desk at the present time the first bulletin sent me from this Station in relation to making and using Bordeaux.

There are many trees dying in my vicinity, owing, I think, to the recent extremely cold winters. The Ben Davis seems to suffer the most. For the last three years this variety has suffered extremely. Other varieties have also been winter killed. In one little orchard of fifty thrifty trees about six inches in diameter, I noticed fourteen dead ones last summer. All died soon after leafing out.

Many young trees are set each spring. McIntosh seems to be the favorite, the agent selling them for $30.00 per hundred, and in many cases they are not true to name, but I prefer to send direct to the nursery and get some good hardy stock and graft them over. By doing this I am sure of getting what I want. Three-year-old trees can be procured at the nursery for

$15.00 per hundred. Many young trees set last spring were very late in starting. Some I noticed did not leaf out until September. This may have been due to the cold, dry season. Young trees are protected from mice by banking earth around them or by using tarred paper. Most orchards are planted with various crops which I think detracts from the quality of the fruit. This is another mistake on the part of the orchardist. If more of us attended these meetings and would profit by what we hear some of these mistakes might be avoided in the future.

A. M. VAUGHAN, ORANGE COUNTY.

I am sorry to say that Orange county is behind in regard to setting out new orchards; there are none being set out, with the exception of my own. It is high time that the Horticultural Society should pay some attention to this matter and wake up the people in that part of the State. The people in the Champlain Valley need not think they live in the only section of the State that can grow apples; we can certainly grow the trees all right and there are certain varieties of apples we think we can grow as well as you can over here. For one, I shall be very glad if the Society can do anything to arouse the east side of the State, especially, in apple growing.

G. W. PERRY, WINDSOR COUNTY.

I have been absent from Windsor county for some time and am not able to make much of a report. We have had a fair crop of apples which brought a better price than usual, but nobody raises apples as a business; nobody picks them with any sort of science; nobody packs them with any sort of skill. In driving about that county in the past ten years I can't recall having ever seen a new orchard of any kind being set out; not over a few trees in somebody's yard. In fact, as I think of it, I can't recall a new building on a farm being built, of any sort of value. The most of the farms in that section of the country are growing up to weeds; a great many of them are let out, the buildings are going to decay, but the woodland is improving in value all the time. It looks now as though very soon there will be grown forest trees mostly and not apple trees, but then, perhaps that will do just as well. Certainly we have made no progress there in fruit culture.

The outlook is very dark, so far as the farm is concerned, for the present generation. By and by there will be lumber to sell. It seems too, that the farmers of today—the common run of them,—are not very intelligent; those I mean who lease or hire these farms; it seems they have very little interest in the work. I know of several cases where a man drives three miles to the depot with a dollar's worth of milk every day. One day I met a man of this type and asked him if he would draw me some wood. His reply was that he couldn't because he couldn't get anybody to cut it,—never thinking that he could cut the wood himself. That is the fruit outlook for that part of the county in which I live, and yet it is a natural fruit district. Every pasture land grows up naturally to fruit trees, and if the cattle didn't gnaw them off, our hills would be filled with such trees; as it is now, we produce the greatest number of cider apples; we can load a car with them every second day and it is no uncommon sight to see loads driven on to the scales and shoveled into the cars at thirty cents a hundred. It is easier to shake the apples off the trees than to pick them.

If one could get at the crop before the fruit is shaken from the trees, he could pick out a good many barrels of No. 1's. We used to have an apple factory and some of the people who worked there used to get their winter apples—good Baldwins and Greenings, from the fruit sold at this price.

I cannot say we are making any progress in that county, yet it is an apple county and in Townshend and Newfane some thirty years ago they used to raise fine apples, plums and peaches. All these things are practically gone now and nothing is being done so far as I know, except by Mr. Halladay—who is not really in that county. He is the only man in that section of the State that is making any progress in the growing of fruit or even keeping things up to where they used to be.

VEGETABLES FOR THE MARKET.

J. Otto Thillow, Philadelphia, Pa.

Market gardening, to be successful and profitable, requires close attention, good judgment, and hard work, even though systematically laid out.

All crops are not suitable to all markets, hence the profitable crops are such as should be grown by market gardeners and farm truckers. Location and soil are the first requisites; all extra labor must be diminished; long hauls are expensive. The time lost in a slow market eats the profits, and also time which might be more profitably spent among the crops. Within the last ten years 75% of the Philadelphia market gardeners have cut down their large fields and turned their attention to more intensive cultivation, and this is mainly under glass. Many of this 75% were forced to retire from their large areas because of the demand for the land, owing to the spread of the city's growth; yet it forced them into lines which they should have taken up years before. With a glass area under control, they are not subservient to weather conditions, they can hurry or prolong the crop to some extent, soil conditions can be had as wanted, and best of all, the glass permits of fall, winter and spring crops, and because of this an active trade has been created.

In 1895 we made investigations among the successful market gardeners of our own neighborhood (Philadelphia), and also Boston and Providence, where today the most extensive vegetable cultivation under glass is conducted.

It is assumed that the best way to tell how to do things is to tell how things are being successfully done; to deal slightly with theory, but largely with facts. We have gleaned from a series of field operations, information, and have freely used the camera where an illustration tells of just how and with what material many of our market gardeners have, through long experience and experiments, come to the front with results from small beginnings, and have acheived success.

One aggressive gardener, impatient with the slowness and small returns for his efforts growing vegetables under glass in cold frames, took the sash from the frames and placed them on a frame work shaped as ordinary four quarter greenhouse, put a brick flue through the entire house, heated it evenly during winter, and produced a crop of cucumbers, which brought in the Boston market $30.00 per 100 in January. With this venture he was encouraged and plunged deeper, and now has the largest vegetable forcing establishment in the country.

Should anyone interested in this branch of market gardening desire to see how extensive the vegetable forcing is in the east, a visit to Arlington and Belmont, Mass., near Boston, and the outskirts of Providence, R. I., would reveal wonders. One establishment at Arlington, has one house 50 x 400 feet under one roof; such a house is devoted to growing lettuce and radishes at the same time, followed by beets and watercress. Everything is done by the simplest methods, these houses having swinging sash on the vertical sides, so that half of the house can be thrown open for quick ventilation, and also to open wide for throwing out the soil and putting in the new, thus avoiding disease and insuring a new, fresh and rich soil for the crops.

The crops grown are all profitable; the foremost is that of lettuce, then cucumbers, watercress, parsley, cauliflowers and beans. The cauliflower houses produce two additional crops before the cauliflower plants require the full area. When the young plants are planted, (and this is usually directly on the ground) young lettuce plants are planted between the rows, and after they are cropped, radishes are sown thin, and produce a crop in four to five weeks. By this time the cauliflower needs the space, and with cultivation and free watering they are then ready for market by March at the latest. The beds are then followed with a crop of radishes over all, or watercress, which is fully matured and marketed by the time of the beginning of outdoor work.

Houses for growing vegetables as forced crops, can and should be built with much less slant than the four quarter span greenhouse for forcing cut flowers or ornamental plants. Many of these houses are built of sash, which are entirely removed after outdoor work is begun; the entire inside is exposed to the weather; a crop of clover is grown, which gives a good covering for turning under and supplying nitrogen and also rejuvenating the soil, and eventually adds the humus so much needed for these active crops. In this way the same soil is kept going for several years, unless this preparation of the soil is going on outside, and prepared and renewed annually.

Anyone who has the skill to prepare the soil and grow the crops, and reaps good returns, is also capable of introducing new and quick methods, and can also establish a demand in any community which needs a good supply daily for hotel and home consumption.

It is also noticeable that just at the time when these forced vegetables are produced by extra exertion and expense, there is a good supply reaching our markets from the far south. They reach the northern markets in fair condition, because of prompt delivery by express, and even freight, but as transportation is the great factor in the expense account, these products are not cheap to the consumer, and fresh home productions command not only a better price, but are in ready demand. This has been tested by growers around New York and Boston.

So much for the forcing house and its products. We will now turn our attention to glass cultivation without heat, or what are known as frames or boxes to the gardener of Philadelphia locality, and as strings to the gardener of Long Island and Massachusetts.

In my observation of twenty odd years, coming in close touch with the market gardener in the vicinity of Philadelphia and New York, I have found they are constantly introducing new methods in growing and dividing the crops to the best advantage. There are many market gardeners in the north-western part of Philadelphia who have over one thousand sash in constant use during the fall, winter and spring; many have as high as two thousand. One grower near Providence, operates 10,000 sash. The frames are built without cross pieces, and arranged so as to remove the ends. This admits of working with horse. The upper or north side is 12 to 18 inches high, the lower, or south side, is from 12 to 6 inches high, the alleys between the frames are 4 feet wide; these two are cultivated with the horse. In many of the extensive places high board fences are used as a protection from the north and west winds; large evergreen trees, or tall hedges answer the purpose as well. The crops grown are lettuce, radishes, corn salad, parsley, beets, kohl rabi, celery, carrots, beans, spinach and mint.

Rotation of crops as now practised, which was inaugurated some years ago, and seems to be beyond improvement, yet the demand will vary as the taste in other things, and other methods to be sought. Spinach sown Sept. 15th, cut at Christmas; radishes sown in February, pulled in April, and followed with beans, is at present practised by the gardeners mostly. Lettuce plants put in in September, cut at Christmas, followed by radishes and beans, is a combination easily followed, provided the grower is generally successful with lettuce. Beets sown in February and followed with other crops, produce early and profitable vegetables.

Some of our aggressive gardeners put in young lettuce plants in October, sow either carrots or beets between the rows, and when the lettuce comes off they follow in same rows with radishes. These are harvested before the beets or carrots need the entire space, and by this method all of the named crops find a market before the outdoor crops have become well started plants.

Cauliflower seed is sown October 5th to 15th; the plants put in frames to stand six to the sash; either radish seed is sown between the rows, or young lettuce plants are put in. Either of these subsequently sown crops come off in time to give the whole space to the cauliflower plants. Care must be taken to ridge the cauliflower to prevent them bending over. The soil in the frames should be 24 inches from the glass at the back or highest part, with a sharp slant to the front.

Parsley is sown in the open ground in early spring on the same ground where a frame of lettuce has just been cleared. The parsley is sown in two rows 5 inches apart, then a space of 20 inches to admit of horse cultivation. This is cut and marketed all summer. On the approach of cold weather, the frames are placed over the bed, and it supplies a profitable crop all winter, and into the spring, until it begins to make its seed shoots.

Many of our Philadelphia truckers have as high as 500 sash in this one crop. It is necessary to protect these cold frames during severe weather with extra covering, and for this purpose the wooden shutter is used. These are made of beaded fencing, which are light, and are kept down either by long boards placed on them and weighted, or some other method to hold them down in wind storms. Salt hay is used to a large extent directly over the glass. Nearly all of the large farm truckers in New Jersey resort to salt hay covering. It means handling twice daily. The New Jersey farm tucker uses hot beds only, especially the tomato growers. They are very rigid about their early crops, and protect the seedlings and also the transplanted plants up to blossoming time in these frames and hot beds, and when the weather is safe, say 10th of May, they are planted out into open ground. Those who grow extra early tomatoes do so by using cold frames into which their advanced tomato plants are put—four to the sash. These are kept sheltered and even forced up to June 1st, when the sash are removed entirely; the frame becomes one mass of growth, the fruit is well set, and by July 1st, a full ripe crop is harvested. In an advanced season they have been put on the market by June 20th. As soon as the open air crop is ready for harvesting, the frames are cleared and clover is sown, which is fairly advanced by August. This is turned under and a fall crop is put in—either plants of lettuce or seed of spinach, radish or corn salad.

Neither time nor space will permit discussing open ground crops; all growers know that which is most suitable and profitable to their markets and locality. Yet I recall how often our market gardeners, who grow large crops of beets, cabbage and many root crops, turn their products into the commission merchants' hands, and do so at a loss; cabbage sometimes yielding only 25 cents per barrel. This does not pay for the hauling. Beets will yield $1.50 per 100 bunches. Usually your crop will come along with other crops of the same kind, and at the same time, there is a glut, and this usually occurs with the crops which require the most handling, and are the heaviest to transport. During the coal strike in the Pennsylvania coal regions, the Philadelphia market gardeners and those of other regions, who had large crops of cabbage, felt the loss of demand for this product seriously, as a large supply is used in the mining regions. The gardeners ran disc harrows over their fields, chopped up the crop and turned it under. Such crops do not pay on expensive lands. Cabbage at $1.50 per barrel does pay.

Kale is still grown by many, although that and spinach are raised over hundreds of acres around Norfolk, and marketed at our door before our home crops are ready.

Asparagus can be made a paying crop by forcing in cold frames, although it is done at the loss of the roots after a very few years of this treatment. Frames are placed over the bed running parallel with the rows, and covering three rows. A crop of lettuce can be harvested by March 1st, and followed directly with an early crop of asparagus at 50 cents per bunch at the least, will net $1.50 per sash. This can be done after the asparagus has had fully two years growth. The same is done with rhubarb, but the boards around the rhubarb must be 2½ to 3 feet high.

A successful operator at Belmont, Philadelphia, follows the following plan: he takes rhubarb root from the open ground in late autumn, packs them one foot apart on the ground under his greenhouse benches and pulls the stalks twice in the early spring. The bed is 4½ feet wide by 150 feet long. The roots are worthless after this operation. The price he receives every year is $5.00 to $10.00 per 100 bunches, which are three to five stalks to the bunch. The space from the surface of bed to the bottom of bench is 2 feet, so there is no room lost. New roots are brought in each year. A grower near Boston has 320 sash over a bed of rhubarb. He pulls only once, and the average yield is 20 pounds per sash; average price, 7½ cents per pound; gross receipts, $480; this means $1.50 per sash on one crop.

A few points on lettuce may be in place, it being the main crop in the forcing house, cold frames and open ground. We have noted, particularly among the successful growers in the vicinity of Boston (and this method applies to anywhere in the country,) that the seeds for lettuce to be grown in the forcing house is sown in beds in the open ground where there is no manure. This is done to get plants absolutely free from germs of mildew, and is highly important. They are transplanted after three weeks, 3 inches apart each way into other beds in the open ground, which are also free from stable manure. In three weeks more, they are transplanted to the forcing house and set 8 inches apart each way. Proper ventilation and watering is highly important from that time on; a uniform temperature with good ventilation is necessary to get active growth, and the watering to be done on bright days if possible. After they begin to head, the temperature can go to forty degrees at night and sixty degrees during the day, or as near as possible; under these conditions they will head uniformly, and crop 90 to 100 per cent. Many of these growers sow the seed August 1st; plant in the house Sept. 15th, and market November 1st; at a time when lettuce is in demand. By this method time is allowed for two crops of radishes or one of watercress, then followed by beans. Usually they follow two lettuce crops, with one of cucumbers.

Prices for lettuce can be given approximately in winter in the Philadelphia market from $4.00 to $10.00 per hundred, and quality good—size controls price. Cold frame lettuce from $3.00 to $6.00.

The wholesale market on radishes from $2.00 to $4.00 per 100 bunches of the red sorts. They are put 10 to 12 in the bunch, and of the white sorts 6 to 8.

Cucumbers are like tomatoes, they need more coddling, and close attention in pollinizing, and this should be done about every other day, as the cucumber, like other plants of its tribe, bears two kinds of blossoms on the same vine—one staminate and the other pistillate, and it is necessary for the pollen to be transmitted. This was formerly done by hand with a camels hair brush, but now the industrious bee, which is an unpaid laborer, will do this work so much better that they have become a useful ally to these growers, and should have harbor. The New England growers have one or more swarms, and as soon as the tomatoes and cucumbers are planted the hive is taken into the house.

Tomatoes are started in seed beds in July; they are transplanted, then potted into 3 inch pots. This insures strong growth. They reach the forcing house bed two months after the seed is sown, and they are then about 8 inches high. Well rotted manure of any kind (except nitrogen) may be used for tomatoes under glass. Sheep manure is excellent, ground bone and bone black are also suitable. The plants are set two feet apart in the house, and trained to single stems and pinching off all lateral shoots; a heavy string is tied to the plant near the ground and then to the rafter directly above; the plant is then trained upright. The day temperature should be from 70 to 80 degrees; the night temperature 60 degrees.

The fruiting begins in three months from the sowing of the seed, or about six weeks after they are planted in the house, and if pollenized regularly and evenly, the fruiting season lasts about three months.

These are some of the paying crops to which the vegetable grower might turn his attention, confining himself to a smaller area, and on the extensive plan vegetables grown under these conditions are in marketable condition out of season. Therefore, prices are more interesting, the occupation more fascinating, and a greater variation of crops in short periods. Prices of forced vegetables at this season might be interesting.

Prices in Philadelphia Dec. 1st this year, for field crops: Beets per barrel, $2.25; parsnips, $2.00; carrots, $2.50; celery, 7c and 10c per bunch; savory cabbage, 85c per barrel; salsify, $3.00 per 100 bunches; parsley, $3.50 per 100 bunches; corn salad, which is grown in cold frames only, is sold now at $2.50 per barrel, and must be cleared off by February, as it is lessened thereafter, because of the southern lettuce reaching our markets by that time. Up to ten years ago corn salad was sold at $1.00 to $5.00 per barrel, which was then considered only a fair price.

"CO-OPERATION."

MR. W. T. MACOUN, OTTAWA, CAN.

This is the second time I have had the opportunity of addressing the Vermont State Horticultural Society, and I hope it may be my priviledge to come here very often, as I find I get many ideas I can take back to Canada and put in practice, and I hope that some things I may say to you will be of practical use.

A few years ago when the high tariffs, which were established in this country against Canada and against other foreign countries were put in effect, Canada was put very much on her own resources. We had not then developed the large British market we have now and the question was what we should do. I think we have developed wonderfully during the last few years just on that account. Our market with Great Britian steadily grew until today it is a wonderful market indeed. Our own home markets have increased also, as our population has grown; now we are sending material over to the United States which it was thought we could not afford to send a little time ago, simply for the reason that we have been bound by circumstances to adopt more economic methods in growing our produce than before. What have been some of the influences to bring this about? As I say, we were forced under the circumstances to do the best we could, and I believe today we have as advanced a system of horticultural organizations in the Province of Ontario as in any other place in North America. For instance, to give you an example, today in the Province of Ontario alone, there are 63 horticultural societies, and 43 co-operative fruit growers associations. This is how our improvement in co-operation came about: About four or five years ago a very progressive fruit grower in the Province of Ontario got the idea that more could be done in co-operation than had been done in the past, so he organized his immediate neighbors into a co-operative fruit growers' association and it worked very well. The experience of the fruit growers in that district had been that when the buyers would come around they were obliged to take whatever was offered them for the reason there was nothing else to do. It was impossible to market their apples to advantage in many cases and the result was that the apples stayed in the orchard unless they sold them to the buyers at any price they were willing to give for them. So this progressive fruit grower started the co-operative work among a few of his neighbors; he agreed to take from these farmers their fruit sent to the packing house; to oversee the work, etc., at a certain charge per barrel and market the fruit for them. The result was a marked improvement in the price obtained. The farmers brought their fruit into the central packing house on hay wagons—not wagons especially made for that purpose—with a lot of straw in the bottom to carry the fruit well; there they delivered their fruit and it was stored until the proper time for it to go to market. Instead of the barrels of apples lying out on the station platform for weeks waiting for a car to come along to take them up, as is still experienced in some parts of the country—and I dare say in your own state—they are usually able to ship any number of cars they wish at any time, and that is a great advantage to the grower. They have also been able to get, I think, fully $1.00 per barrel more than the farmers who sell their fruit in their orchards. Not only are they getting more for their fruit but they are reaping the benefit of co-operation in other ways. After a while, as has been indicated, they found it was necessary in order to get the best results to build a storage house; they learned that if they had a carload of apples to ship they could not leave them on the platform very long without deterioration; so they determined to provide storage for them; the result is that after they put that plant in they could hold the fruit for any length of time they wished and ship it whenever they liked and could get the best price. They are also able to buy their boxes and barrels in large quantities and store them and thus save money. They are now talking of ordering their fruit trees by the co-operative method. I know of some co-operative societies who have done this to good advantage.

I have spoken to you of but one organization but in the last four years there have developed 43 of these co-operative societies in the Province of Ontario. The farmers have realized so deeply the good resulting from co-operation, that societies are springing up in different parts of the Province every little while. You can easily see the small scale upon which this work started with us and what the result has been. If you can get a few farmers, who know each other to be honest and straight in their dealings, to start together in this work, a society will soon grow to large proportions. As I say, we now have 43 of these co-operative societies; these societies have formed a central co-operative association and they hope before very long to have a central distributing point for all of these societies. They are also demanding now that there will be an inspector at point of shipment. We have a Fruit Marks Act and have had it for some few years, but these growers now ask that the Government send an inspector to each of their packing houses to inspect the fruit before it is shipped; they believe before the fruit leaves that point it can be examined more thoroughly than after it has traveled a number of miles. They are willing to pay the expenses for someone to examine the fruit at so much per barrel.

These are some of the benefits of co-operation. Another is, and the subject has been discussed at the meeting of the Ontario Fruit Growers Association, co-operation in the buying of trees. In Vermont, I presume you have had the same experience, of trees not turning out true to name. This has been a very serious handicap to the fruit business in Canada and I believe also in some of the states. A fruit grower orders a large number of trees; and when they come into bearing finds they are of some other variety than that ordered. This should not be continued. Futhermore, it has brought into the market a very large number of varieties, many more than would be the case if a man were certain of the varieties he ordered. They are talking of buying trees in a co-operative manner and in a way that all the trees in one locality will be, for example, the Baldwin, King and Greening,—if they are the kinds that succeed best,—and in another locality MacIntosh, Wealthy, etc. We are hoping in this way to get more trees true to name. You have about fifty experiment stations in the United States and in Canada, we have twelve; a large portion of these stations are now originating new fruits. The result will be within a few years that the market will be simply flooded with new varieties unless the fruit growers' associations impress upon the growers the importance of this co-operation in buying and getting only a few kinds in each district, as otherwise the number of varieties that will be planted in the future will be much greater than in the past. These are some of the benefits of co-operation.

With regard to the central storage house. The co-operative associations are trying to get a central distributing point. It is believed with such a point, the prices will be still better and there will be better equipment in every way; they will be able to accumulate a large number of barrels in that way and control the market to an extent that is not possible for them to do now. One company has built in St. Johns, N. B., a cold storage house that will hold 80,000 barrels of apples. St. Johns is an export port for Great Britain, and this company believe that they have made a very profitable investment. I believe they have. As soon as the fruit growers get to know they can ship to that distributing point and have their apples held there for any length of time at the right temperature, their establishment will soon be filled with fruit. In Ontario we export about one million barrels of apples a year, so you see the importance of having some large establishments of this kind.

In speaking of co-operation, I have referred almost altogether to the Province of Ontario, as it is there co-operation has made the greatest progress.

"PROFESSOR" PHELPS:—In regard to getting trees that are not true to name: is not that due to the fact that we buy trees of jobbers or tree agents instead of getting them from responsible growers or nurseries?

MR. MACOUN:—That is very true; as a rule farmers buy their trees from agents. The agent is all right if he is an honest man and knows what will succeed; he can sell trees as well as the nurseries, but, unfortunately, a large number of them do not know the kind of fruit that will succeed in a certain locality and we find that they sell trees often that will not grow in that particular soil and climate. Often the agent is an irresponsible man who sells trees for a year or two and never comes your way again; sometimes, too, you get trees from a nursery that are not true to name. By getting them in large numbers it is not very likely, however, you will get them under wrong names.

Evening Session, Williams Science Hall.

DECEMBER 3, 1907.

PRESIDENT KINNEY:—I wish to call attention to the proposed change desired to be made in Article 4 of the Constitution; this matter will be acted upon tomorrow afternoon. I wish also to appoint the following committees:

Nominating Committee—E. S. Brigham, L. H. Sheldon, D. T. Trombly.

Committee on Resolutions—A. M. Vaughan, H. M. Totman, G. W. Perry.

I now introduce to you President M. H. Buckham, who will give us the University welcome.

Mr. President, Ladies and Gentlemen:

It is with great pleasure I welcome this Horticultural Society to the University. The Mayor has welcomed the Society to the city of Burlington, I suppose mainly on its commercial side; I welcome you to the city on the side of its science and its fine art and its poetry. I am very glad to welcome you here just at this particular time of year; the days are getting dark and short; we need some sunshine; we get the sunshine bottled up in coal and things of that kind; you bring sunshine to us in the form of color, fragrance, and you bring the poetry of the world to us in vegetables and fruits and flowers. The oftener you come to the University the better we like it. We want to help the farmers and the horticulturists and to have them feel this is the place where they are sure of a welcome; where they have a property of their own and a right always to feel at home.

I am not going to make a speech because I have sympathy for those who are to follow me. I have so often suffered from the want of sympathy on the part of those who preceded me on such occasions that I always have a most sympathetic feeling for those who follow me. If I were to attempt to make a speech there would be two points that would appeal to me. One is, what is, to me, the fascination of your work. They tell me over in the medical college that whenever the professor of theory and practice speaks on any particular disease all the students right away have the disease. The doctor talks about tuberculosis and there is a stream of students directly coming to consult him to see if they haven't got tuberculosis. So when you get together and talk about any particular fruit or flower, I want to be in that particular business right away. When Mr. Kinney brings his apples here and talks about them, I want to go right to work and cultivate an orchard and set about planting it at once. It is just the same when Professor Waugh talks about plums, I want to start about cultivating plums. When anyone talks about roses, why I am right there myself.

I think you have one of the most delightful and fascinating of all occupations, and you ought to be thankful to the Creator of the products who made your business for you and called you into it. I envy you.

The other point is the immense possibilities of your work. The new varieties which you can create; I choose the word carefully, "create," for although the Creator has given you material, when you make a new rose or a new plum you are the creator in a sense. You are all perfectly familiar with the old story about the strawberry:—"God might have made a better berry, but doubtless never did." I am not so sure of it, that God has not made a better fruit than the strawberry, and He may be waiting until you find it. When you think what men like Mr. Burbank is doing, finding or creating new fruits, new flowers, new vegetables, the vista opens up before us to infinity and what a delightful prospect, what a delightful possibility, the Creator has put in our hands to create after him, these beautiful things to look at and to enjoy. But, Mr. President, when that time comes, if it ever does, that I am going into some of these nice things, it will be on the islands. A good many years ago you and I were neighbors on the islands two winters, where I taught school while I was in college, and I learned to love the islands and I often dream of going back there. I want you to keep a place there near you, because if I can ever raise as fine a barrel of apples as you sent me last winter, I shall be perfectly happy.

I have nothing more to say, except to welcome you on this delightful occasion, because of your delightful occupation, and your beautiful vegetables, fruits and flowers.

PRESIDENT KINNEY:—I was called upon to reply to your mayor's welcome this afternoon on behalf of our Society, and I thought surely I wouldn't feel it my duty, or worthy of me to take the time of those who shall follow, to respond to President Buckham's very kind and most generous welcome to our Society tonight, but I must do so. There was a time just a few weeks ago when the island apple men were in trouble and trying to secure one hundred pickers, to gather their crop. Had we then known of President Buckham's desires we would have been glad to send him word. More than that, at the time there were many of our island apple men who were looking with anxious eyes toward the young men of this institution, praying that we might get hold of them just then; we thought it would do them good as well as ourselves. I am glad to tell you that our first Society meeting was held under the roof of this college institution. At that time there were very few of our farm boys in the college studying horticulture. Today we know there are many already studying and more anxiously wishing to do so, and they are making wonderful progress along these lines under the guidance of President Buckham and the professors here. This is also true in other states,—great progress is being made and the number of students in horticulture is rapidly increasing. We indeed thank President Buckham for the generous welcome he has given our Society tonight.

"HOME AND TOWN IMPROVEMENT."

(Illustrated.)

MR. J. OTTO THILLOW, PHILADELPHIA, PA.

(Introduction by President Kinney.)

We are anxious for improvements in our country homes and in our towns also. We are proud of the improvements which we have made, but we are anxious to have greater improvements made after we are through and gone We are fortunate in having with us tonight one who can entertain as well as instruct us in this line of work.

NOTE:—Owing to the difficulty of adequately reproducing an illustrated lecture, the Secretary has taken the liberty of expressing, both in his own behalf and that of the Society and its friends, their great appreciation of the rich treat afforded them by the lecturer and his slides.

PRESIDENT KINNEY:—I am sure we have been greatly interested and benefitted by this illustrated lecture and it is useless for me to comment upon it at this time. We have with us our friend, Professor Waugh, who returns to us from Massachusetts to speak to us on landscape gardening. We are glad to have him with us and welcome him at this time.

"LANDSCAPE GARDENING."

(Illustrated.)

PROF. F. A. WAUGH, AMHERST, MASS.

Professor F. A. Waugh, Massachusetts Agricultural College, spoke on the general scope and character of the art of landscape gardening. The exercise consisted chiefly in the exhibition of lantern slide views following the various points, so that no very intelligible report can be made aside from the illustrations then shown. Several examples were exhibited, first, to show the wide range of usefulness which this art presents. It is applicable to a great variety of practical problems. It embellishes public grounds, improves railroad station grounds, helps private places, cemeteries, and practically every kind of outdoor property.

Next it was shown that these problems are met in a truly artistic manner. Each problem, when properly solved, is solved with reference to the utilities as well as the beauties of the place in hand. Practical ends are achieved in a beautiful manner. The proposition was then advanced that this art, like every other great art, has had a long and eventful history. This history was rapidly sketched by showing a number of pictures of gardens in various ages in different parts of the world, beginning with Ancient Egypt, passing through Mesopatamia, Greece, Rome, Italy, France, England, and arriving at the modern art of landscape gardening as shown in the United States.

The place of landscape gardening in the United States was discussed more particularly, endeavor being made to show what the character of landscape gardening should be in a country like ours. The speaker thought that landscape gardening should take its character somewhat from the character of the natural landscape. This, he said, was wild, almost savage, and always extensive. A number of photographs of natural American landscapes were shown including Niagara Falls, the Rocky Mountains, Mount Hood, Mt. Ranier, the Southern Swamps, etc. Lastly there were exhibited a number of lantern slides showing typical examples of the best styles of modern landscape gardening in America.

WEDNESDAY FORENOON, DECEMBER 4, 1907.

PRESIDENT'S ADDRESS.

Members of the Vermont State Horticultural Society, Ladies and Gentlemen:—

I assure you this address will be very brief, more particularly on account of the time needed for discussion of the various matters than other reasons. If I didn't say a thing more than to impress upon your minds the importance of the discussion of the various questions by members of the Society, I would feel I had done my duty. Individuals should stand upon their feet and speak from their standpoint on these various topics, and when a person takes a stand upon a question he should hold to it until he is convinced that he is wrong. When he does this he is interested and he can interest others.

One year ago our President spoke to you in his address of an office that should be established,—that of State Entomologist. I wish to bring the matter again before you and ask that you keep it in mind. It is a very important office. In Maine they put off the establishing of such an office until the brown tail moth and its twin sister moth actually was in their midst. If their officer had been on duty and started fighting it from the very first you can see what expense would have been spared to the state. It has cost the state thousands and thousands of dollars to get it in control. If Connecticut will hold it in check, Vermont need not fear, but it may come here and strike us after all. We need to be prepared.

Another matter which I want to call your attention to is that of cold storage. We have but one cold storage in Vermont, that is used successfully for apples, and that is in Rutland. The one at St. Albans was not successful to that degree that it was kept for that purpose. There should be a cold storage in the city of Burlington to take care of the apples grown in the Champlain valley. There should be a distributing plant connected with it and it should be controlled by the State or Association I am in favor of commercial cold storage. I urge upon the people of Burlington to build such a plant. This is the place most convenient for the surrounding apple country, where we can get to it and home any day in the year. Think about this and take action on it.

Home storage is a matter that interests us more than we are aware of. There are no home storages for the special purpose of holding apples except on the islands; we have twelve or fifteen now. They are buildings erected or used for the special purpose of holding fruit. You would not think of leaving your cattle without a barn in which to keep them; also barns for feed, grain, etc. This association should take up the home storage subject and follow it up until you get home storage plants in every town in the State. Don't ask somebody from New York or Philadelphia to come here and hire the rough scuff to come into your orchard and pick and assort the apples for market. They can't do it as well as you can. Economy is the great standard in the apple business in Vermont. You must practice it upon every line from start to finish, and believe me when I say, there is no one thing that will put as much money into the farmer's pockets as home storage.

Another thing we need to do, and that is to set more commercial orchards in the Champlain valley and the taking care of the ones already set; don't neglect an apple tree. There has been set in Addison and Bridport some new orchards, and there is quite a bit of setting done in our county. If a farmer can't set a commercial orchard, he should at least set enough to raise fruit for his own use, but we need commercial orchards in every county. We cannot expect to do a commercial business unless we have the product behind us, the goods to work with, and in order to get them we must first set the trees. The orchards down this valley very largely are those set by our fathers and forefathers, who have gone before us. We are simply reaping the harvest of their work. How many of us are setting out new orchards that our sons and our daughters may reap the harvests in the years to come? Some of us may question the profit in an apple orchard. It is a fact we have orchards, the owners of which shake the fruit down and sell it by the hundred or ton; they don't care whether vinegar or jelly is made from it. Our orchards surely will not be a source of profit if we dispose of our fruit in that manner. The orchards demand our best and most careful attention if we would derive from them good returns in money and reputation. And when you grow good fruit hold it until there is a demand for such first class product and then you will get a high price, which is what we should demand for that article. Grow only first class fruit and put it onto the market at the right time, and you have learned the secret of success in apple growing.

Another important matter is that of co-operation. That was spoken of yesterday, in an interesting manner, by Professor Macoun, who told of the experience of the Canadians along that line. It is wonderful to note the progress our neighbors have made since they have adopted that method of work. Look at what co-operation has done for Vermont in our dairying interests. Let us co-operate in the apple business in the buying of our trees, especially; say half a dozen wish to buy 500 or 1000 trees each; send to one nurseryman and get them in one batch and then see which one will grow the best trees and fruit. Co-operation means extra effort; it means getting out of the ruts you are in. Co-operate in the sale of fruit also and sell in the best markets at the best time.

Another matter which should interest us is the fact that the different horticultural societies in New England and also that of New York state, at their annual meetings have been and are discussing the matter of legalizing a standard by which we should assort, pack and mark our fruit.

I wish we might take some action upon this question at this meeting, that the other societies may know our voice in this regard. This matter also calls for your attention and it is for you to say whether we shall send a delegate or delegates to the different state meetings to be present at their annual meetings, and also invite representatives from the other states to visit us. This will cost the Society dollars and cents and so each of you are interested.

MR. WRIGHT, of Addison:—During the last year there have been about 3000 trees set in our county by three orf our different people and I think Addison county has a larger representation at this meeting than any other county.

PRESIDENT KINNEY:—Instead of three or four people setting out that number, there should be 100 persons willing to set as many. It is our pleasure though to encourage this work and we are glad to congratulate Addison county on her report.

MR. PUTNAM, of Cambridge:—We hear a good deal about co-operation, but we don't hear much about forming a stock company in this valley. My idea is that a stock company with proper tract of land and proper trees would be a fine thing. I haven't heard a suggestion along that line yet.

PRESIDENT KINNEY:—If we are to judge from this exhibit of potatoes, I think all that would be necessary is a stock company consisting of one member.

MR. PUTNAM:—It might be a good idea to have one member control the stock.

MR. JAMES, of Middlebury:—In speaking of cold storage, wouldn't it be better for each locality to have its own rather than have to send fruit to Burlington, on account of the extra expense? In regard to assorting fruit: I think the proper way is to do it right from the basket as it is picked; put the fruit directly into the barrels and head up. This method keeps the fruit more clean, your fruit is bruised less and is in better shape for the securing of fancy prices in the market.

POTATOES FOR THE EARLY MARKET.

E. S. BRIGHAM, ST. ALBANS.

There is a time in late July and early August when the markets of our Vermont towns and cities are not supplied with native grown potatoes. To meet the demand for this staple article of food, dealers import large quantities of southern grown tubers, which must be transported long distances and be subjected to the commission of several handlers. It is evident, therefore, that methods which will enable the home grower to hasten the maturity of his crop will ensure him not only a ready market, but a premium equal to the before mentioned transportation charges and commissions. In this paper I will give an account of certain methods we have adopted at Brigham farm with this end in view and the results obtained.

If we are growing apples we select varieties best suited to our specific purpose, and so if we are growing early potatoes we must select for our use the variety which will give us the largest number of bushels of marketable potatoes in the least possible time. What is that variety? Every seedsman has it. It is listed in their catalogues under every form and color and its name is legion. We have tried three varieties successfully—Early Thorburn, Noroton Beauty and Extra Early Eureka. All are good, but the Eureka, all things considered, is most suited to our use. It is white in color, round in contour, and is firm enough to be dug with a digger without bruising.

But with an extra early variety, and with the best methods of tillage we could employ, we have found it necessary to hasten the maturity of the crop by starting the tubers into growth before planting, in order to get into the early market at the most profitable time. The method we have used is called budding and was brought to my attention by bulletin 36 of the Rhode Island Experiment Station. It consists essentially of exposing the seed to light in a warm, even temperature for a period of from six to eight weeks before planting. This may be done most conveniently and in the least space possible by constructing trays to hold the tubers. Strips of board 1½ by 18 ins. are placed on edge about four feet apart. Across these are nailed eight common lath, placed about one-half inch apart and a lath is nailed on each side. This gives a crate 4 feet long and 18 inches wide, which will hold about one bushel of seed potatoes. These trays are filled at any convenient time during the winter with medium sized potatoes packed in as closely as possible, one layer deep, the stem end down. Late in March these trays are brought from the cellar to a warm, well lighted room and placed in a rack so constructed that the trays are separated by a nine inch space. This space admits to each tray a fair amount of light and air. The potatoes do not require watering and need not be given further attention until planting time. In a few days little sprouts will begin to push out. These sprouts do not grow weak and sickly like those grown in the cellar, but are green in color and thick, firm and tough. If conditions of light and temperature are right in six weeks they will be one-half to one inch in length, about one-fourth inch in diameter and at the tip rudimentary leaves may be found all ready to unfold, while at the base of the sprout are many roots ready to spring forth when they come in contact with mother earth.

Early in May we are ready for the planting. We first prepare the soil with the greatest care. When we plant on clover sod we plow the ground in the early fall, harrow, and spread on twelve loads of horse manure to the acre. Then we plow again in the spring and harrow until the soil is in perfect tilth. The field is marked in rows three feet apart with a two row Eclipse corn planter, which at the same time distributes the fertilizer. By going twice in the row, nine hundred pounds of fertilizer are applied per acre. This amount of fertilizer with the manure will give us more available plant food than the crop will remove, but I think a larger amount of fertilizer would be profitable. We must aim to furnish the growing plants all the available plant food they can use and place it where it is easily accessable to the roots, because we wish to secure the greatest growth in the shortest time.

Furrows are opened by running a shovel plow in the marks left by the planter. This operation aids also in loosening the soil and in thoroughly mixing the fertilizer with it. The trays are taken from the rack and carried to the field in a spring wagon to avoid danger of breaking off the sprouts by jolting. At the field two trays at a time are placed across a wheelbarrow and wheeled along between the rows. Two men, one on each side, take the sets from the tray and after cutting them into pieces, each having a good strong sprout, distribute the pieces sprouts up, 14 inches apart in the furrow. About two inches of soil is drawn on with a hoe and the planting is done

If conditions of temperature and moisture are favorable, it is surprising how quickly the rudimentary roots at the base of the sprouts will push out and begin their work of taking plant food from the soil. Before long too, the rudimentary leaves will begin to peep through the ground. At this time in our latitude we must be on the lookout for frosts. In 1906 there came a period of cold weather after our sets were up, and one Sunday afternoon a frost threatened. We went out with a cultivator and winged a light covering of dirt over the young plants. In the morning every plant not so protected was ruined. After the cold wave passed we raked off the dirt and the plants grew all the faster for the hoeing they had received. Through the summer the tillage should be frequent enough to keep down all weed growth and to keep a dust mulch on the surface of the soil. This will conserve the soil moisture and protect the plants from drought. The spraying is also important. As soon as the bugs appear we apply with a power sprayer about one hundred gallons per acre of Bordeaux mixture in which are dissolved eight ounces of arsenate of soda and twenty-two ounces of acetate of lead. The Bordeaux mixture will check the ravages of the flea leaf beetles and protect the plants from fungi, while the arsenate of lead will put an early end to the young slugs. This amount of Bordeaux mixture should be applied often enough through the growing season to keep the plants well protected.

We may readily see that at the present cost of labor we have quite a heavy investment in our field of potatoes by harvest time. Does it pay? In 1906 potatoes were very scarce at the time our first ones were ready. The price of southern stock went up and old ones were gone. Orders came faster than we could fill them at $1.20 per bushel. In a few days we sold from our first acre nearly two hundred dollars worth of potatoes. The land was immediately seeded to Japanese millet and in the fall we harvested fully two tons of good millet hay. But there is another thing which made that acre of potatoes profitable. When the seed was planted the soil was infested with witch grass, but not a single root survived the thorough tillage given the potatoes and the smothering of the heavy growth of millet.

It is our custom to force, by the method I have described, seed enough for one acre. The remainder of our seed is started in a similar way by spreading on barn floors in April as soon as the weather permits. By cutting the seed into half bushel baskets and .dropping directly from these baskets with care we are able to gain some time in the maturity of the crop. This year, although the cold, dry weather was not favorable for the best working of these methods, three acres of potatoes averaged a gross sum of $150 per acre. We are satisfied that there is an average profit in the business which is satisfactory.

DISCUSSION.

MR. TROMBLY, of Isle La Motte:—Do you plow in the fall and replow in the spring?

MR. BRIGHAM:—Yes.

MR. TROMBLY:—In that way don't you turn some of the sod over that had been plowed in the fall?

MR. BRIGHAM:—If it is plowed early in the fall and harrowed thoroughly the sod is torn up pretty well and it decomposes and then we plow a little deeper in the spring and it gives us no trouble.

MR. PUTNAM:—I wish to impress the idea upon you that the Eureka is the best early potato we have under trial today, —at least that is my experience; I wish it were a trifle earlier, but the potatoes are always good, even when they are but two-thirds grown; they are very like the Snowflake, I don't know but equal to the Snowflake.

MR. BRIGHAM:—I wish every one would examine the exhibit of potatoes Mr. Putnam has; they are very fine specimens.

MR. WHEELER, of Massachusetts:—I would like to ask Mr. Brigham what the nature of his soil is.

MR. BRIGHAM:—Where we plant potatoes we plan to have a soil that has the least clay possible; there is some clay in all of our land and more or less heavy. I have come to the conclusion that more fertilizer would be profitable and I am planning to use 1200 pounds in addition to manure.

MR. SHELDON, of Fair Haven:—What time do you get your potatoes in the markets?

MR. BRIGHAM:—In 1906 about the middle of July; this year in August.

MR. SHELDON:—Do you prepare your own arsenate of lead?

MR. BRIGHAM:—I buy the arsenate of soda and lead acetate and so prepare my own arsenate of lead.

MR. MACOUN, of Ottawa:—We have spring frosts later than you have them here and I don't know that it would be very profitable for commercial growers,—the growing of potatoes from sprouted seed, but we intend to go into it and try and find out how often it would be necessary to cover them up, as Mr. Brigham has suggested. In Ireland, the Department of Agriculture has given a good deal of attention to the sprouting of potatoes; they have very mild spring climate and it would be a great opportunity for the Irish people to grow the tubers in this manner. In regard to the position of the potatoes for sprouting, I understand it is held that it is not necessary to place them on end so long as they are left with plenty of space and air, and that just as good results are obtained and it is a cheaper method of handling. The best early potato we have is the Eureka; it is not quite as productive as some of the other early potatoes however.

MR. PUTNAM:—I want to say a word in regard to the fertilizer question and the potatoes grown on my farm under the supervision of the people at the Experiment Station. These potatoes are probably finer than any ever grown in the State of Vermont; they were grown on meadow land that was "run out". No barn manure was used, but commercial fertilizer at the rate of 1200 pounds of high grade phosphate to the acre. This costs from $36 to $40 a ton wholesale. The potatoes there speak for themselves.

MR. VAUGHAN, of Randolph:—Mr. Brigham speaks of carefully planting the pieces of seed with the bud on top. I would like to ask if he has tried the experiment of putting the bud bottom side up and the difference in time of appearing above ground.

MR. BRIGHAM:—I have tried no experiment of that kind and I would like to know, if anybody has, whether it would be just as well.

MR. VAUGHAN:—I don't think it makes any difference. I have dug into a hill where the bud end was planted down and found the little sprout coming from the under side curved around the top.

MRS. FORBES:—I experimented a little this year and planted some with eyes down and some with eyes up; I didn't discover any difference. I tried to be very particular about it. I would like to ask Mr. Brigham if he has discovered any difference in cutting and planting the potatoes the same day, whether they come up as quickly when they are held over for a day after being cut and are dried over.

MR. BRIGHAM:—I have no data on that subject that would have very much weight. We always plant the potatoes as soon as possible after cutting. I know that when we have three or four baskets of seed cut and it comes on a period of rainy weather

I have given them away rather than to plant them, but those who have planted them had satisfactory results, but I don't know how their crop compared with mine.

MR. VAUGHAN:—In regard to disinfecting the seed for scab. If you do that, when do you do it?

MR. BRIGHAM:—That point, perhaps, I should speak of. The first year, 1906, I relied on the sunlight to kill the scab on the seed that was put into trays, but although they were dug early there was some evidence of scab; I believe if they had been left to fully mature, they would have been a scabby lot of potatoes. But on the seed that was planted by the other methods,—spread on the barn floor and soaked in formaldehyde solution,—there was no sign of scab.

PROFESSOR STUART:—As to the matter of position in planting: I don't think it makes very much difference; in fact, I am quite certain that it doesn't. Very careful experiments have been made and the results have been negative. I should say, however, there was decided advantage in planting the sprouted buds as Mr. Brigham handles them, right side up, if there is any advantage in the warmth of the sun at that season of the year they get it quicker than they would if planted bottom side up and in the cold soil. Half an inch or an inch makes a big difference and I should say there would be a few days' difference in the time of showing above the ground.

SOME CROPS SUITABLE TO GROW IN YOUNG ORCHARDS.

A. M. VAUGHAN, RANDOLPH.

First—Should crops be grown at all? I answer, "Yes". I am well aware that many of our large apple growers will take issue with me, nevertheless, there are reasons why it is perfectly legitimate to grow certain crops between the rows in young orchards, and progressive, systematic growers have produced results to back up the theories. It is a well known fact that the roots of a tree keep pace with the branches. It is also a well established fact and custom that we should not set trees (apple trees) nearer than thirty feet (better forty). Now the progressive, up-to-date farmer comes along and tells and proves to us that with proper rotation of crops and fertilizers the soil not only maintains its natural fertility, but improves and produces better crops after each rotation. Why then, must we leave all this space between the trees idle, which will not be filled with roots for twenty to thirty years?

Many a young man would start an orchard, who does not, if he knew he could grow some crop and get the use of his land while waiting for the trees to come into bearing. The fact is, they cannot afford to lose the use of the land long enough for the trees to come into bearing; and I say it is better not to lose the use of the land, even if you could afford it. In the first place the trees need cultivation the first three or four years until they get well started, and in the second place while we are cultivating the trees we can just as well be cultivating some crop, and incidentally make the crop pay for the use of the land and cultivating the trees.

Now, if it is permissible to grow crops in the orchard, and I claim it is, what crops shall we grow? Most any crop that is a close feeder, *i. e.* does not send its roots too far for food and water, and, generally speaking, this corresponds to the height of the plant. The trees should have first consideration and no other plant be allowed to trespass on its feeding ground, which enlarges year by year. The root crops are excellent in that they are close feeders and require liberal fertilizing—potatoes, onions, cabbages, beets, carrots, turnips. Not only do they require liberal fertilizing but they require frequent cultivating to do their best and this is a strong point in tree growth, of the luguminous crops, peas and beans. These are especially useful in vicinities where canning factories are located. If no canning factories are near, any of the varieties used for baked beans are all right. I do not need to mention the fact that peas and beans bring to the soil more money value in nitrogen than they take away in potash and phosphoric acid.

Another venture of the canning companies is canning pumpkins. At Randolph they paid $10.50 per ton this year. These were mostly grown in corn, but they are an excellent orchard crop, as the soil can be harrowed several times before it is time to put the pumpkins in and the vines make an excellent cover crop. The same is true of squashes. Prof. Stuart realized about one hundred dollars per acre this year from Hubbard squashes and claims they require less attention than any other crop he knows of, and very little added fertility from the fact that the hills are so far apart. In all these crops we should allow room between the branches and the first row for cultivation. I do not believe in growing corn in an orchard because it sends its roots much farther than most people are aware, and robs the tree before we know it. Of the grain crops, buckwheat and India wheat are all right because they do best sown late, about June 20, and this gives the trees a chance to make the most of their growth before the wheat gets hold.

In closing, let me repeat the point I tried to make at the start,—that good husbandry will not take from the soil one particle of fertility the tree needs in later years, but rather will add to it.

DISCUSSION.

MEMBER:—The old adage is that there are "exceptions to all rules", and I think it applies to the raising of corn in an orchard. I set out about 100 trees 40 ft. apart each way; the land was in clover; the following year I broke up about a third of it and fertilized it with barn-yard manure, planting it to corn; the corn had a stand of 12 feet and you would hardly imagine it was an orchard of apple trees. I found the trees had made a remarkable growth. I raised corn there this year, breaking up the remainder of the field; all the trees are fine, but those where I had corn two seasons back are larger than the others.

PROF. STUART:—What did you grow on the other portion of the orchard the year you raised the corn?

MEMBER:—It wasn't broken up or tilled, I just took the hay off.

MR. MACOUN:—I have seen some bad effects from growing corn in young orchards. An orchardist in Ontario planted a young orchard to corn; he cultivated his corn late and his trees grew late; a severe winter followed and the result is that as you go through this orchard now, you can see on the south side of nearly all the trees where the bark is dead, owing to sun scald; these trees are 6 or 7 years old and just coming into bearing. This man is very much discouraged and one cannot blame him. As nearly as I can judge the following was the cause: The late cultivating of the corn kept the trees growing late, and also shaded the trunk; so when the corn was cut the trunk was softer than it would otherwise have been, and when sudden changes of temperature occurred, during the winter and early spring, the tender bark and underlying canbium was injured. I believe there should be no crop grown in an orchard which has to be planted early, because in the early part of the season, during April and May, all the moisture in the soil is needed for the growing trees; we have scarcely enough moisture now in the early part of the season for apple trees, and any crop that takes it from the soil in the early season should not be planted. I prefer growing potatoes or beans; they don't take the moisture until June and cease taking moisture very early, and you can cease to cultivate early in the season.

MR. PHELPS:—If I were going to set another orchard, instead of setting 40 acres I would set about 5, and those varieties that would bear early; I would cultivate the trees thoroughly and have them bearing at five years of age. I know a tree that four years from setting—set at 2 years of age—produced three barrels of apples. The variety is Fameuse. I claim that what can be done with one can be done with 100 trees. I believe in sowing buckwheat on orchard ground; don't cut it, just allow it to go back, and it will come up next year. It shades the ground and makes the soil light.

MR. SHELDON, of Fair Haven:—This charge against growing corn in an orchard is rather a reversible double back action. I understand Mr. Vaughan would not grow corn because its cultivation would retard the growth of the trees and Mr. Macoun would not grow corn because the cultivation keeps the trees growing too luxuriantly. I think one can raise corn to good advantage in an orchard; I don't know as I would like to grow the very largest kinds, or too close to the trees, but I think ordinary sweet corn for the market can be grown safely and successfully.

MR. TROMBLY:—In our locality, I think three or four years ago, when apples were so scabby, I know that some orchards were planted to corn; in such orchards the air and light were kept away from the trees, the lower limbs especially, and the fruits were covered with black scab. In regard to raising buckwheat, this year I cultivated up to the 12th of July and then sowed buckwheat and harvested a good crop.

MRS. FORBES:—If you were going to plow up an old orchard what would you put in?

MR. TROMBLY:—Year after year I plow my orchard and sow it to buckwheat; I don't think it takes so much away from the soil as a good many other crops and the apples are partly grown at that time.

MRS. FORBES:—What about beans?

MR. TROMBLY:—I have never had any experience with beans; never put in anything but buckwheat.

PROF. STUART:—That is an important question Mrs. Forbes is asking and I think our President can answer it. Whatever we plant would depend on the condition of the orchard, whether it was lacking in humus or nitrogen, and the size of the trees, whether the ground was shady, etc. You must be careful not to plow too deep; it requires shallow cultivation at first, and the growing of such crops as the appearance of the trees seem to indicate and justify. Mr. Trombly may have an abundance of nitrogen in his soil and buckwheat may be the crop for him to grow.

MR. TROMBLY:—I neglected to say that every third or fourth year I sow clover and plow it under.

PRESIDENT KINNEY:—It depends entirely upon the condition of the orchard as to what one should grow there; if the trees don't make good foliage growth it denotes there is lack of nitrogen there and the ground should be sown to clover or peas or beans and plowed in. Then the next year plant it to some small crop or beans or corn. Here in this section I don't think there is the danger of sun scald that there is in Quebec, because we don't cultivate late enough, and we should not cultivate very late on account of the young trees; if you do, have the crops far enough from the trees so it won't affect them. Whatever crops you grow put on all the fertilizer you think they need so they will not steal any nourishment from the trees.

(SONG BY PROFESSOR PHELPS.)

PRESIDENT KINNEY:—We have a gentleman with us from Massachussetts who is not on the program, but who will speak to us a few minutes, Mr. E. Cyrus Miller, of Haydenville, Mass,

MR. MILLER:—Mr. President. It is a great pleasure to be here as one who is interested in growing fruit in Massachusetts, especially the apple. I have traveled around a good deal visiting institutes and meeting people who are interested in the same vocation, and I assure you it is a pleasure to come up through your State and discern with my own eyes, not only the scenic beauty for which your State is noted, but the natural advantages possessed by your State for the growing of apples. I have been much interested in the collection of fine fruit, showing what you are doing; also in all that has been said here. One thing which your president has said I would like to qualify, —and I say it from my experience, in reference to the setting of large orchards, the large planting of trees. According to my experience and observation the most successful way for the average New England farmer is to establish an orchard in a small way and work from small beginnings. There are only two classes of people who are able to conduct an orchard as a large proposition from the start. The one is the corporation with ample means behind it, and the other is the wealthy man. The average fruit grower in New England better start in a small way, taking perhaps one acre of ground and developing it as an orchard, and the larger farmer with more means, may take a tract of from three to four acres. The idea is that with a small amount of land and a few trees you can get better results than if you try to start in a larger way and put the same amount of time and energy into a large area that you should on a small piece of land and a few trees. I believe the reason we find so many neglected orchards is from the fact that the farmers have attempted too much; have too many trees; whereas if they had limited their operations to a few and performed the work better there would have been no cause for neglecting the work as has been done in so many cases.

The conditions which exist in that part of Massachusetts where I live are similar to the conditions here,—the foothills of Vermont extending through the western portion of Massachusetts. I have been much interested in Mr. Vaughan's ideas as expressed here, the methods he has used, etc. We have used all classes of crop products grown in young orchards, the success of which depended on the amount of fertilizers and cultivation and care used. I think perhaps the most successful section of young orchards which we have has been grown to tobacco,—perhaps you could not use that in Vermont; I consider that as one of the most valuable crops; it calls for thorough fertilization and cultivation up to August, when cultivation ceases; it also serves as a cover crop. A hard wood growth is made with which the trees can go into the winter season and withstand all temperatures. Almost any crops can be used in the development of a young orchard, and as it increases in growth the crops should be changed, not by rules, but by observation of the grower. There can be no rules to govern, the grower must learn the needs of the trees from their appearance; —the trees must tell their own story.

I could not bring our orchards to Vermont, but I have brought a few photographs representing orchard views, storage buildings, pictures of the fruit, etc., which I have put upon your tables and I shall be glad to have you look at them, not to exhibit merely what we are doing, but to illustrate what I am doubly interested in,—the great possibilities of apples in New England.

THE RETOPPING PROBLEM.

D. C. HICKS, NORTH CLARENDON.

Recently I received a list of questions from a prominent fruit grower, and among them was the following:—"What are the best commercial varieties found in the orchards of Vermont?" "Name the unprofitable varieties", "And what per cent. do they represent of the whole?" This last question is a very difficult one to answer, but it suggested to me the subject of this paper. Since 1872 I have been working in the orchards of Vermont and New Hampshire on both native stock and engrafted, and what I may say in this paper are jottings from my experience in this work.

Very few of our orchards, even in the best sections of the Champlain and Connecticut River valleys, but what contain trees of varieties that are not profitable to the grower. How they came there is not a proposition for us to consider at this time, but what to do with them to increase their value as an investment.

When the owner of an orchard finds that several varieties that he is growing are not proving remunerative, either from unproductiveness or poor market value, then he wants to know what to do with them; make fire wood or change the tops by regrafting to varieties of proven value.

In some cases where the tree shows low vitality, with a poor trunk and a badly cankered top, the firewood remedy is the one to apply and fill the spaces with young stock; but should the trees be of the other kind, good, clean, healthy trunks, and tops in which the dead wood has been kept trimmed out and fresh, clean, live wood made up the tops, then the owner can go forward with good assurance of success, provided the work is properly done. We mean by this that the workman should be worthy of his hire; his tools, cions and wax must be of the best, for without these the mechanical part cannot be properly done. Then comes the other test of the engrafter's ability, in the forming of the new top; he should see at a glance the limbs he wishes to use, to form a well proportioned top, how to make the proper insert; not too many or too few, and from the manner of growth of the variety he is using; whether to cut out on the smaller diameter of the limbs or back nearer the trunk junctions of the larger limbs.

Thirty years ago last spring I worked out a job for a man in Sullivan County, N. H., that is a good illustration of what can be done under like conditions. The orchard was an old one and the trees very large, but the soil and location excellent, and the trees had been in preparation for the work for a few seasons before. There was no dead wood in the tops, which were fresh growth from sprouts and the bodies were sound. As the trees were very tall, in order to get the new tops as low as possible, we cut to large diameters, using a modified form of cleft engrafting and even, then in many instances, having to use the wedge to relieve the too severe pressure upon the cion. In opposition to our usual course, the owner insisted upon having a full top put on the first year, and the results proved the wisdom of this course. The varieties we used were such as was needed to meet the demands of a local market—Pound sweet, fameuse and yellow bellflower. A few years later we visited this orchard and found it in good bearing condition and an excellent investment to the owner.

We consider it the best custom, in most cases, where the tree has a large top, to be two or even three seasons in removing the old top and installing the new; we consider it good practice to put the first season's work upon the higher points of the top and to work down as the operation is continued. One point is well established, that the best results are obtained where beforehand the trees are put in shape for the work by judicious pruning. Care must be taken in removing the surplus limbs, those not used in forming the new top, sawing *close* to the shoulder and waxing all cuts over 1½ inches in diameter.

Earlier in this article, we named as essential to success, the best wax and cions. The wax must stand heat and cold and remain on cut until forced off by the healing process; we have used in our work the Trobridge formula, a wax that meets all requirements. Cions cut in November and December, from thrifty bearing trees, packed in moss and stored in cellar until needed in spring, are safest to use and will prolong the season over spring cut.

We cannot advise, in general, as to the varieties that are unprofitable, but will name a few that in our experience has proved so. Scott's winter, blue pearmain, Tolman sweet, Jersey pippin, seeknofurther, wealthy, gideon, bottle greening, Smith's cider, two or three varieties of the russet family and Ben Davis.

The following varieties are among the best we have used in our work of retopping: Canada red, hubbardston, sutton, baldwin, yellow bellflower, R. I. greening, porter, foundling and the fameuse group. Also where there is a demand in local markets, the following sweet apples are fine growers and early bearers: pound, Jacob and Bailey. If asked to name the three best stocks for retopping, they would be Tolman, wealthy and blue pearmain; some strong growers are found in the russet family.

BEAUTIFYING THE HOME HORTICULTURALLY.

J. OTTO THILOW, PHILADELPHIA, PA.

There are many ways of beautifying the home, particularly the country home, both architecturally and horticulturally, and what might be considered beauty by one is abhorred by others. The tastes for the different styles of architecture are as varied as the different types of each style. The tastes for the different styles of horticulture are also varied, as the horticulturally inclined are studying horticulture in its different phases, the more intelligent, the more critical, and the best indication that horticulture has its students.

Position, condition, and location have each an individual claim. The subject we wish to treat particularly is that of beautifying the country home from a horticultural standpoint. This is the only means of adding beauty to a country home, as the plantings can be made to conform to any condition. Unless the home has natural, romantic surroundings, much can be done each year to increase the beauty and also to enhance the value of the country home, whether it be a large estate located on an elevation, surrounded by acres of artistically laid out grounds, and embellished by a natural grove; or an isolated property of modest outlay; or the home of one square of houses in the village; each and all can be beautified by having some attention paid to growing plants, shrubs, vines, and trees. It is also true that improvement made by one energetic occupant of a modest country home has the tendency to spread the taste among others of his neighborhood, just the same as painting the fence or house, or whitewashing the barn. So if there are a few people in the community who are determined to keep up the horticultural trend, the taste and desire will permeate the whole neighborhood and engender a contagion of rivalry A grass plot, a few perennials in plants and vines, a few shrubs and drop trees, would seem enough to satisfy the needs of a small home on a street, standing alone or in a row.

But all the efforts to beautify the individual home would be fruitless unless there was a uniformity on the street or road; the condition of the sidewalks, trees, fences, or without fences; a general clean condition of the surroundings; all this tends to beautify each individual home, and when there is harmony between the authorities, who have their part to do, and the home owner, then a condition or improved order of things is rigidly carried out.

A grass plot 10 x 10 feet does not permit much planting, yet it alone lends much to beautify a small front yard, even though there is no room for anything else except a few vines on the house itself or the veranda. Hardy perennials which were obsolete for many years, have again come into general use and should be used in the border, or along the walk, fence or wall, even though the border is only twelve or eighteen inches wide.

Annuals from seed should be selected in the desirable colors. Where space will not permit tree planting of either evergreen or deciduous, then shrubs should be used, such as exochordia (pearl bush), chionanthus virginica (white fringe), white and red flowering dogwoods, halesia (silver bell), euonymous (burning bush), magnolias, salisburia (maidenhair tree or Gingko), lilacs and spirea, these are shrubs, but çan be grown to large sizes and make good substitutes for trees.

The use of vines on stone and brick houses is not objectionable, although claimed that they keep the wall damp, it is just to the contrary. A novel feature and an economical one practiced now extensively is that of using window and porch boxes with high colored flowers, very much in imitation of the Normandy homes; this is now being done in our American cities, among the hotels and homes. They require little attention and bloom throughout the growing season.

For the more elaborate home, one not very extensive, we might suggest a few points to prevent what is often found to be general, and that is, overdoing; many things are not considered at the outset, viz. the size of a tree or shrub a few years after planting; shutting out vines by planting trees in lines of such; covering verandas too heavily with vines and cutting off the point of view which is most valuable during the summer when the trees are in foliage.

A general outline of work for a country home which is limited in space similar to city lots, would be treated about the same, viz, to provide a cover or screen at the rear, and if possible, provide lower border masses and terraces, and plant next to the foundation of the house, and in no case plant in the middle of the lawn where there is not more than fifty feet front. An important lesson and the first in landscape gardening is to make a picture. All the preliminary work such as grading, planting, seeding, etc., should tend toward this one object. Neither is all lawn and no trees or shrubs picturesque, nor all trees and no shrubs and no lawn at all romantic.

The green sward is the canvas, the house and immediate surroundings the central figure, and the plantings complete the composition and add color. In order to give this picture its landscape effect, it is necessary to embellish it with borders of shrubbery and perennials to form the framework.

This might lead you to think that the outlines of the place should be oblong or square, but not necessarily so; any tract can be laid out and planted to conform to any shape. Where the residence is on an elevation, the tree planting should emanate from the elevation, so that the residence is not poised alone on the highest point. Where the residence rests in a depressed area, then the tree plantings should moderate about the residence; this is to give prominence to the house and not a shut-in appearance. A flower bed in the middle of a lawn is a flower bed and nothing more; while it lends color, yet it does not blend with the surroundings; yet if the color plantings are along the borders, or in long strips on the sides of entrances, they lend much to the central figure, the residence. Clumps of evergreens on points, and at corners add to the effect and take away the flatness of a lawn. An inflexible rule should be to keep the center open, mass the sides, and avoid scattered effects. Shrubbery along the back borders is much improved with color planting directly in front; the shrubbery is the background.

The entrance, to be effective, should be along a winding border, and never at the center, even though it must cross to the extreme opposite after entering. Avoid terraces if possible, but if unavoidable, they should be at a moderate angle if they face south, east or west and are to be in grass; but if the soil is shallow and of clay they can be at a sharp angle and face any point of the compass if planted with rambling roses, these with their glossy foliage and abundant bloom during the summer, and red pods in the fall are very desirable. On high banks which cannot be graded advantageously and are difficult to establish lawns upon, planting with shrubs is advisable; the following varieties are suitable for such work: barberry, standard or tartarian honeysuckle, dwarf deutzias, wild laurel (kalmias), white alder, clethra alnifolia (spice bush), hypericum (St. John's wort), robinia hispida (rose acacia), red twigged dogwood, snowberry, Japan quince. These are some of the best and are distinct in color of flower and foliage, and when established, the lawn can be made which will then establish itself.

Vines can be grown in the open area on individual structures, and some will do better than against a veranda or wall. Clematis, all varieties, and wistaria can be grown as standard lawn specimens. The preliminary work of laying out a place is the most important. This cannot be emphasized too strongly. When grading is necessary (and this is the most expensive of all the work), it should be carefully carried out. A good depth of soil all over, and where the soil has to be supplied, it should overlay the gravel or clay soil one foot if possible. The most carefully prepared lawns and plantings will show the effects of starving on thin soil, no food or other methods can be applied to give lasting effects.

I am ready to listen and profit by any suggestions along this line. I am frequently asked, "What fertilizers are to be used on lawns where the soil is less than four inches deep?" So the soil is the chemical storehouse, you must have the soil.

The roots of grass or plants will not get the food of the chemicals until the soil has absorbed it. Good, deep soil is the first essential. Renovating after finishing is expensive and seldom effectual. Proper drainage, if such is necessary, is never done without its good effects. Waterlogged soil will not allow more rain to enter; sick soil can neither breathe nor digest any fertilizer, and it is also incapable of utilizing the heat of the sun for the development of plant life.

You would hardly select for a home a piece of ground which does not appear to have natural drainage.

These suggestions may appeal to you more as a modern landscape gardener's proposition, referring to a newly-laid out place, with all modern appliances, new house and other needed buildings. Not altogether so; they can be applied to a country home already established, and in many cases the old country homes are sought after by those who admire the rural and as near natural effects as possible, with the surroundings quaint, and well set with trees and shrubbery. With the already established growth of trees and shrubs a little additional color, removing of surplus trees, the desired effect can be readily accomplished. In no case shut out sunlight and air, they both give life.

PRESIDENT KINNEY:—Along the line of having some law to legislate or establish a standard by which we can assort, pack, mark and sell our fruit, and by which the dealers and the consumers may buy and use this fruit, I wish to speak. Today all over this country we are working on a hit or miss plan in the buying and selling of fruit. We had this matter up for discussion at the Worcester meeting last March; it was very thoroughly discussed but left in an unfinished condition; at the Maine meeting this fall the discussion was left in the same condition. I wish this Society would go from this meeting with this matter settled as far as its mind and judgment are concerned; we want a law that will protect our apple growers in this State, and at the same time injure none; one that will protect every buyer that comes to our State and every house that sends to our State for its fruit. They have over across the line a law protecting and governing the grading and marketing of their fruit; they have a set of inspectors there, who are called upon from time to time to inspect their fruit; they are not expected to inspect every barrel, but simply to keep watch of the packers and shippers throughout the Dominion, and when one is found wanting they look him up and bring his attention to the fact that he is putting in his packages something different from what he has marked on the outside. We want just such a law as that in Vermont. At the exposition in Virginia this fall it was almost unanimously agreed by those present that the national law should be adopted governing these matters.

It seems to me important, that we as a Society, should work from this day on to have such laws placed on our Vermont statute books at the next session of our legislature. Later on if a national law should be established we can of course, conform to it. We don't want to wait. Two years ago at our last session we had a bill before the legislature which passed the house and would have been signed by the Governor but I think the trouble was in the Senate. I understand the failure came just on account of one man saying "go slow". But anyway, it wasn't the right kind of a bill; it takes a good deal of time to prepare and work up the bill we need passed, and now after two years we should be able to present a bill for passage that will be correct.

MR. WHEELER OF MASSACHUSETTS.

It seems in Oregon and Washington they have what they call associations, which stand back of the growers and the quality of their fruit; these associations are formed by apple growers in a community who appoint or select a certain place or places where the apples are brought and assorted by a corps of men absolutely trained for that work. These men travel around, sometimes, among the farmers and assort their fruit for them. I believe in New England and New York that is going to be the only way to solve this problem; these men know what a number one, a number two and a number three is; the grower has nothing to do with it. These trained men will assort and pack the fruit, judging entirely of its quality, its appearance and its size. I believe if we are going to have a law compelling us to keep to a certain standard we must have trained men to go among the farmers to pick and pack their apples.

MR. PUTNAM.

I agree exactly with the views of the gentleman who just spoke. It is amusing and ridiculous to know how so many of the farmers go about packing their fruit. It is an utter impossibility in any orchard in any vicinity to get or trust a man to pack fruit. If we are to have a law compelling us to conform to a certain rule, we must have men trained to go among the farmers to pick and pack their apples. There is no question about that. In my own case I trusted a neighbor to pick three barrels of nice fruit; he was to hand pick every one of them; the apples were brought and put into my cellar and reported to me to be "hand picked". After they had been in the cellar two weeks, two of the three barrels showed decay badly. I believe the ordinary person is not to be trusted to pack apples. I believe men educated for the work should do it.

MR. SHELDON.

I don't wish to cast a wet blanket on the previous remarks, but in my case this would hardly apply; my fruit is all disposed of in the local market and every thing that comes off the tree goes into the delivery wagon; we sell everything and waste nothing. I know that is not possible with you large growers, and it does seem that it is of everlasting importance that you have a right market for your apples; also that you have a mark or emblem for your apples, so they stand for something; so that when a barrel of Vermont apples is sold the buyer knows what he is going to get. I think the head ought to be the same as the remainder of the barrel; we should have a standard and conform to it. I hope we will not let Maine get ahead of us in apple growing; in this Champlain valley nothing pays so well and the farms should be filled with orchards.

MR. PHELPS.

I think there should be some law in regard to the putting up of apples; there is nothing people can cheat more in than in this; I believe there should be a law so severe and the penalty so great that no man would dare to put up a barrel of apples that were not good all the way through.

PRESIDENT BUCKHAM.

I am in favor of a law protecting the producer as well as the buyer and consumer. I go into the Boston market and a man shows me a barrel of northern spies; they look pretty well and speak for themselves; I don't know anything what is below the surface. He shows me another barrel of the same variety of apples, this barrel is from Vermont; that to me is a kind of a guarantee, that if they come from Vermont I am willing to pay a little more. Then he shows me still another barrel of the same variety of fruit, and this barrel is from the Champlain valley; that is an additional protection to me, so I buy it, for I am perfectly sure that the apples are of the best and that it is an honestly packed barrel; I am also justified in paying 50 cents more for that barrel because it comes from Vermont and particularly because it comes from the Champlain valley.

MR. MILLER.

This is a matter to which I have given much thought and attention, and I find that the men objecting to such a measure are the small growers; the large growers are in favor of such a law; they know it is for their financial interests,—to say nothing about the moral obligations,—to make good honest packages, for they know if they do not,—selling as they do in large quantities, that they will acquire a reputation that is not desirable. On the other hand, small growers who have a few barrels this year and perhaps not any next, don't seem to be able to grasp the situation and realize the moral obligations that underlie such a measure or standard; and so I want to suggest to your honorable president and to the members of the Vermont Horticultural Society, the necessity of the spreading of instruction through your farmers institutes to create a sentiment in favor of this measure.

MR. MACOUN.

In regard to our Fruit Marks Act in Canada and the working of it. It was felt in Canada some years ago that the fruit trade was gradually going down and that something must be done to improve it, because you had shut us out largely from the American market, and our greatest market at that time was Great Britain; our object was to get the best price we could, and the difficulty was to have the fruit packed honestly. The contrary practice had grown to such an extent that the farmers didn't consider it dishonest, and it was practised by a large proportion of them. For that reason and under those circumstances the growers felt that something must be done to improve the prices in the old country so we could come in closer competition with the United States. In 1901 the Ontario Fruit Growers' Association prepared a bill for the Dominion Government, which was passed. This bill required the grower to put on a closed package his name and address and a certain brand that will represent the quality of the fruit in the package. For number one grade the grower is obliged to put in the package 90% of perfect apples, that leaves a margin of 10% for wormy and other imperfect apples; for number two, the packer is allowed to put in 80% of good apples, sound and perfect apples, a little smaller than number ones, which leaves 20% margin for imperfect fruit containing worm holes, etc., and the number three's, include the culls and lower grades. How is that act carried into effect? We have only about twelve inspectors and one chief inspector, residing at Ottawa, who is called upon to settle cases in dispute; the twelve inspectors are scattered about; they are not expected to examine every barrel of apples; they learn to know the dishonest man and to look out for his fruit. Now the growers are asking for inspectors to be sent to the places where the apples are packed; we have 43 co-operative fruit growers' associations in the Province of Ontario and these men are asking that inspectors be sent to the different packing houses so that the fruit may be inspected before shipment; to inspect every carload would require an army of inspectors; the suggestion is that the growers pay the inspectors so much a barrel for inspecting the fruit. If the Government agrees to this, it would cover the expenses of the inspectors.

We have found that the grade of apples going to the old country has improved very much, and if you consult any sales account of the Liverpool market, you will find that the Canadian apples sell from one to two shillings or more per barrel more than the Maine apples.

MR. PERRY:—Isn't it a fact that there is a small percentage allowed for the face to be better than the body of the barrel?

MR. MACOUN:—Yes, it is allowed that the facing of the barrel shall be a little better than the center, but not more than 10% better in the No. 1 grade. In regard to the No. 2's, I don't remember the exact wording, but I think the apples must be of nearly medium size, 80%, free of worm holes, spots, bruises, etc., and any other injury that causes material waste; that is the point, material waste.

MR. MILLER:—What is the size limit?

MR. MACOUN:—There is none; in the No. 1 and No. 2 grades the fruit has to be of medium, or nearly medium size in regard to variety packed; the inspectors were expected to be lenient in regard to all these matters at first as it was a matter of education. At first we found the farmers did not know how to pack, but as they were taught and warned of the consequences they learned better.

MR. WHEELER:—The gentleman's remarks cover the point I wish to make, that it is through the small co-operative societies of the farmers that this fruit marks act is going to be possible; they must get together and formulate an association that will protect and assist their interests.

MR. SHELDON:—We are all unanimous in regard to the benefit such a measure would be, and of the importance of it, and would it not be better to have the matter go before the legislature with the weight of the opinion of this Society behind it?

MR. FOOTE:—In regard to this measure; the originator of this bill was an Addison county man; I conferred with him at one time about it and told him I thought the matter ought to be in control of the State; at that time or later I was warned that the State of Vermont was sick and tired of commissions and that the bill would be killed if it created a commission that had to be paid by the State; that if he wished to present a bill before the legislature that would pass he ought to make it self supporting; I also went direct to the chairman of the board of agriculture and conferred with him in regard to the bill. The measure, as our president has said, passed the house, but was killed in the senate, because it was too radical. If we want a bill to pass we should make one not too radical; we had better have one with little less weight than none at all.

MEMBER:—I think the bill would stand a better show by carrying the indorsement of this Society. Last fall the opposition to the bill came from the small growers and farmers that do not grow fruit commercially; they were afraid there was some catch in it that would harm them in some way, and the bill as it passed the house did not provide for a stamp or indorsement that would show in the markets of the country that the fruit had the indorsement of the inspector.

MR. MACOUN:—The inspector's mark does not go on our packages if the package is all right.

MR. SHELDON:—I make a motion that this Society go on record as being in favor of such a bill, and if we can do anything further, that a committee be appointed to prepare such bill.

MR. VAUGHAN:—I would like to amend that motion,—that the Executive Committee, which will be nominated at the business session this afternoon, be instructed to form a bill to be presented to the committee on agriculture at the next session of the legislature.

MR. SHELDON:—I accept the amendment.

MR. FOOTE:—I second the motion as amended.

Motion put by President and unanimously carried.

PROF. STUART:—The New England horticultural societies have held two meetings to which delegates have been invited from other societies, also from this Society. I think it would be well for us to express our desire at this meeting as to whether we wish to continue sending delegates to these other horticultural societies in New England for the purpose of discussing this matter. Already two meetings have been held, one in Massachusetts and one in Maine,—I attended the first one; in the discussion a few were outspoken in favor of the measure; others were in favor of it, but still wanted to hold back and go slow; the same thing prevailed in Maine and "go slow" carried the day. Now if this "go slow" business is going to continue throughout all these meetings that are being held for the purpose of such discussion, I don't see any special benefit in sending delegates to these meetings from this Society. I believe there has already been an invitation extended to this Society to attend the Connecticut meeting at Hartford, to be held in February. I am perfectly willing, if the Society wishes to, to waive any feeling I may have in the matter, but I don't think it is a profitable thing if nothing comes from it. Discussion might go on until the end of time if there are a few who have the gift of speech to continue saying "go slow". The prime mover is the worst offender, and as long as he is the worst offender unless delegates from the other societies are willing to stand right up and say the thing must be decided by a vote, the thing will go on indefinitely without settlement. I don't believe that anything will ever come through the small fruit growers' co-operating and asking for legislation; they will never do it; it is the men who are more deeply interested from whom the educational work must come. No one will learn to pack more quickly than one compelled to do so by law; when compelled he will soon learn to know the difference between a No. 1 and No. 2 fruit and especially if there is a penalty if the work is not done as prescribed by the law.

PRESIDENT KINNEY:—The matter of sending delegates to the two previous meetings was left with the executive committee; suggestions as to sending delegate to the Connecticut meeting can be given this afternoon, if the Society wishes to take action.

(ADJOURNMENT, NOON.)

Wednesday Afternoon Session, December 4.

PRESIDENT KINNEY:—The first is a matter of business for the Society, the reports of committees:

REPORT OF THE COMMITTEE ON RESOLUTIONS.

Whereas the Vermont State Horticultural Society in its 13th annual session in Burlington experienced one of the most valuable and instructive meetings in its history,—therefore be it resolved that the Society go on record as expressing its appreciation to the City of Burlington, and the University of Vermont for the hearty welcome extended us.

Second.—To the assistance visiting horticulturists have rendered to our program and discussions.

Third.—We continue to recommend a standard packing box 10 x 12 x 20 inches for *fancy* fruit.

Fourth.—We again express a desire that our State Executive take measures to stamp out San Jose scale.

Fifth.—That we cordially invite all florists to join with us and thus make our display more attractive, also realizing that friendly competition aids all in fortifying their weak points.

Sixth.—We regret to note the departure from our midst our late brothers, S. P. Gordon and Edward Gordon who were practical and successful fruit growers and leading citizens of their town and State.

Respectfully submitted,

Committee on Resolutions, { A. M. VAUGHAN, Chairman.
H. M. TOTMAN,
GEO. W. PERRY.

Unanimously accepted and adopted.

REPORT OF NOMINATING COMMITTEE.

The nominating committee wish to re-nominate the present officers for the ensuing year.

E. S. BRIGHAM, Chairman.
L. H. SHELDON,
D. T. TROMBLY,

The report was unanimously accepted and adopted

PRESIDENT KINNEY:—We have with us one who always shows a deep interest in the State of Vermont and her various institutions, and who has consented to say a few words to us, Governor Proctor.

GOVERNOR PROCTOR:—I did not come here this afternoon for the purpose of saying anything. Professor Stuart and your President invited me to come, and I was very glad indeed to do so, but it was understood between us that I was not to be asked to make a speech.

You probably understand perfectly well that I am not personally familiar with the line of work you represent, and therefore am not able to bring you anything that will be of service or help to you in the work in which you are engaged, but I can say that I am greatly surprised, and in fact astounded at the splendid exhibit of fruit before me. I have known that certain sections of Vermont were producing splendid fruit, but certainly I had no idea it was being produced to any such extent that it is and of such splendid quality. It has been a great delight to me to see this exhibit. We are apt to think of Vermont as occupying the northeast corner of the map, and as having long, cold winters; that the spring comes pretty late and the summer goes early; that the seasons are short and that it is difficult to raise many things that are raised in other parts of the country. All these things may be true; on the other hand we must remember that we have a great deal from the standpoint of nature and an agricultural standpoint to be very thankful for in Vermont; much in the soil; much in the way of climate that is desirable. We are saved from a great many things that other parts of the country, that seem more favored than we, have to contend with,—from severe drought; severe floods; destructive winds; earthquakes; and many things injurious and harmful to an agricultural country, we are saved from. I believe that a work of this kind, that an organization and society of this kind, is particularly helpful to the State of Vermont. The State is simply what we, individually, make it; no better and no worse, and any organization of this kind that brings together its product and information concerning its work, that is really a practical medium of exchange, cannot but be very helpful indeed. You will find men and women in every locality plodding along year after year, doing the best they possibly can, perhaps, reading some, studying a little, but it does not begin to do the good, as this getting together in a business like manner, learning what each other is doing, and hearing what each other has to say, and receiving and giving encouragement, which is particularly helpful in work of this kind.

I believe the State of Vermont does not appropriate or spend $500 or $1000 to any better advantage, or to as good advantage, as putting it right into an organization of this kind. Of course it does not begin to pay those who do the work for their time, but it is bringing, I believe, real genuine and vital good to the State of Vermont. I believe money spent in this way is spent to much better advantage than spent in any other way.

A suggestions has been made by the committee of resolutions respecting an act of legislature regarding the San Jose scale. It was a thing I knew something of by repute but nothing of from practical knowledge. The legislature, I think were very reasonable and saw the importance of stamping out that pest; the legislature showed an interest on the part of the people of Vermont in that kind of work, that would not have been possible ten years ago. I believe the position the legislature took in that department of work,—that many of them knew nothing about,—showed that they were waking up to the importance of this fruit growing industry and that it should be and can be one of the greatest industries in the State. As far as my practical knowledge goes, I have to get into communication with some one who knows more about it than I do; I go to Professor Stuart, who seems to know all about it, and he has rendered very efficient and faithful service. I stand ready to do every thing in my power to stamp the pest out, and I want the assistance of every man in Vermont to that end. I have conferred frequently with Professor Stuart and have left matters in his hands, largely. I have enjoyed being here and thank you for the opportunity of saying a word to you.

PRESIDENT KINNEY:—We have another business matter to attend to at this time, that is the proposed change of the constitution, relative to the executive committee,—that it shall be composed of the president, secretary and three additional members, to be elected by the Society at large, at each regular meeting. Before, we had on the executive committee, besides the president and secretary, the vice presidents from each county; this made a very large board and it was impossible to get it together for business; so it was thought advisable two years ago that we change it. The question is, will you vote to make this change in Article IV of the constitution? Have you any suggestions?

MR. FOOTE:—This seems to be a very good change, and I would make a motion that the constitution be changed as proposed by the president.

MR. BRIGHAM:—I second that motion.

Unanimously carried.

PROFESSOR STUART:—As the committee on nominations has not named these three additional members, I would suggest Mr. Brigham as one member of the executive committee.

MR. PUTNAM:—I second that motion.

Carried.

Mr. VAUGHAN:—I would move that Mr. Foote be made a member of that committee.

MR. TROMBLY:—I second that motion.

Carried.

PRESIDENT KINNEY:—We have with us a gentleman from Concord, Mass., Mr. Wheeler, who has had a great deal of experience in the growing of small fruits and who has come here to give us some practical ideas. We have heard him in Massachusetts and in Maine, and we are going to hear him today in Vermont. He is a young man and we expect to hear from him a good many times later on.

SMALL FRUITS.

WILFRED WHEELER, CONCORD, MASS.

In taking a view of the fruit situation of the country in general, one is apt to underestimate the value of the *small fruit* crop, giving prominence to the apple and orange crop, putting them down as more important contributions to fruit industry, statistics however, show us that the strawberry alone is grown in as large quantities as the apple and forms throughout a shorter season, as necessary an adjunct to the fruit consuming public as any other fruit produced.

From a commercial standpoint, as yet in New England, small fruits have not attained as much importance as they deserve. The strawberry is perhaps an exception to this rule, particularly in the vicinity of our large cities where it is grown chiefly to supply the local market, but even there the amount grown is small when compared with the south and west where thousands of acres are devoted to strawberries which are grown and shipped to markets from 500 to 2000 miles away. This shows what quick transportation has done for a crop which 40 years ago was produced in the home garden.

At present the people of New England grow about one-half the small fruit that is needed for their consumption, leaving the balance to be supplied from other states. This lack of small fruits is particularly noticeable in the rural districts, where many of the farmers are engaged in dairying and do not consider it necessary to provide their families with the fruits which are so delicious to eat and so easily grown. Then, too, in those outlying parts of the country there is a large amount of wild fruit, such as blueberries, raspberries and blackberries which can be had for the picking and which to a certain extent fill the place of the cultivated fruits, but to my mind, these are only poor substitutes for the home grown article which can be gathered at your back door, and which excels in quality and flavor the uncultivated varieties.

Few people realize that the strawberry, also the current and gooseberry can be successfully grown among young apple and pear orchards, thus insuring a quicker return from the land than by waiting from seven to ten years for the larger fruit to bear. Study your conditions and if you are growing fruit at all, see if you cannot get in some of these small fruits and help out your income as well as furnish you with an occupation a part of the year when the general work of an orchard is more or less slack.

Small fruits come at a season when they are particularly needed and wished for and should on that account be welcomed and appreciated, and the growing of them should appeal to those who are interested in fruit culture, not only from an economical standpoint but also from what might be termed the home garden point of view. Here in Vermont where you have a large summer population the question of supplying it with fresh fruit ought not to be a difficult one to solve, when you have the strawberry bed, the blackberry and raspberry patch and the currant and gooseberry bushes to depend on.

It is often the case in country towns and especially those near small cities, that the few berries that are raised are sent away and the unlucky householder who has failed to supply his own needs from his garden finds it impossible to buy any fruit near home. Yet these people from the city are willing to pay well for something they can't get at home, but with which you can supply them right here on your own farms, namely, fine fresh fruit. Then, too, where many of the farmers drive every day to railroad stations and large towns with their milk, butter and eggs, it would be a source of additional income to add a few boxes of choice berries to the load and either take them to the local market or deliver them to the householders of the town, for your small city is often supplied with fruit sent from Boston, which when it arrives is hardly fit for use and could not in any way compare with the native crop.

When you consider that these small fruits, the strawberry, raspberry, blackberry, currant and gooseberry, can be grown to perfection on almost any soil and with almost any exposure, you can readily see that it can be made a profitable as well as a pleasant occupation, aside from the other work of the farm, and there will really be no excuse for not planting them to the extent of your ability to care for, and of your market to handle such crops.

We need more home fruit gardens in New England and especially gardens where the healthy, pleasant and profitable occupation of small fruit growing for commercial purposes is undertaken. Then we would not see our markets filled with the products of other states and the money which might be ours going in other directions; not infrequently out of the country altogether.

There is one other important need in connection with small fruit growing and that is *more men*, more young, efficient, well qualified men to take up this important branch of horticulture, to take it up in a sensible, thoughtful, scientific way, realizing, of course, that there are drawbacks and disadvantages as there are along any line of work, but determining at the same time to make a success of small fruit growing in New England. The outlook for this industry was never more encouraging than at present with a developing country, a shifting population, a grand exodus of the people from the city to the country during the summer, and above all with a largely increased appetite among all the people for small fruit. There is a demand for greater efforts on the part of the horticulturists of the country. Then again new uses are always being found for these fruits they are now used in so many forms of preserves, in medicines and since the enforcement of the pure food laws their juices are actually being found on the soda water fountains.

A very important point which ought to have consideration of New England fruit growers, is the shipping of our surplus small fruit crop to some of the southern cities. Some years the larger northern cities are overcrowded with strawberries, while some of the southern markets are unsupplied and would gladly welcome the fruit which is being sold at home at a loss. You ship a perishable article like milk great distances, why not try the experiment with small fruits?

Of the strawberry, the most important of this group of small fruits, I wish to speak somewhat at length. Its ease of cultivation, its great adaptability to soil and climate, the quick returns it gives, the beauty and quality of its fruit, all combine to make it the most popular fruit in the world. There is probably no climate between the north and south temperate zones that the strawberry will not grow in and we find it under such varying conditions in the hundred acre field and in the city back yard, growing and flourishing and producing its wealth of crimson fruit for the joy and refreshment of mankind. In spite of the ease with which the strawberry grows, there are a few general directions which should not be forgotten, when successful strawberry culture is the desired end,—first,—the situation for a strawberry bed should be protected from sweeping winds and also from the burning hot sun of a southern hillside. Then the soil must not be too wet or too dry and the plants when set should be thoroughly cultivated, weeded, and protected in winter.

If possible, choose the land for a strawberry bed with a slight slope, enough to drain off surface water, but yet not so steep that the soil will wash during heavy rains. If you have no choice and must use flat land, see that there are no low places where water will stand and cover the plants in winter. If the land chosen is too wet, and by "*too wet*" I mean that the ground water is nearer than one foot from the surface, it must be drained in some way; a convenient method is with tiles or stone drains. Dry land can be improved by the addition of meadow mud and plenty of manure, but better results will follow from the choice of the moist land, for during the fruiting season moisture is needed to fill out the berries and bring them to perfection. A safe rule to follow is that land that will grow good corn can be relied upon for strawberries.

It is best to prepare for your strawberry bed at least one year before you are ready to plant it, breaking up sod land and planting it to corn, or some crop which will keep the ground well stirred up, and rid it of weeds. After the corn is harvested cut all the stalks in early September if possible, manure the ground, 20 cords per acre is about right, and plough in the manure at least six inches deep. Harrow the surface of the ground and immediately sow rye or winter wheat for a cover crop. This is one of the most important steps in preparing land for fine crops, for this cover crop keeps the soil from washing from deep freezing and thawing and above all, retains a great deal of the natural soil fertility. In the spring when you are ready to set your plants the rye will perhaps be six inches high. Plow it under and at the same time you will bring to the surface the manure which you applied in the fall and which will now be in the best condition and position for the roots of the newly set plants.

Another method of getting ready for a strawberry bed is by sowing a couple of crops of buckwheat the year before the bed is to be planted and these together with some manure,the same proportion as mentioned before, will put the ground in excellent condition. Always keep in mind that soil well prepared is one-half the fight.

In this method of soil preparation as in the other, do not plow the land in the spring until ready to set your plants, for the surface of the soil dries out very fast and it is useless to plant in a dry soil unless rain is certain. After plowing, harrow the land and get the soil as fine as possible, and it is well at this time to harrow in a good dressing of lime, about one ton per acre but do not apply fertilizers now. Far better results are obtained from adding fertilizer when the plants are growing during the summer. It is impossible for the roots of a newly set plant like the strawberry, to take up an adequate amount of nourishment from a highly fertilized soil, but this same plant will stand lots of feeding later on. A dressing should be applied about three weeks after the plants are set out, one thousand pounds of wood ashes and five hundred pounds of bone per acre, to be followed a week later by a dressing of at least five hundred pounds of tankage or dried blood per acre.

Setting the Plants:—It is best to have your plants all ready to set as soon as the field is smoothed off. But from the large number of varieties of strawberry plants that are offered for sale you will perhaps want to know something about the best to plant. While it is impossible to give exactly the kinds best suited to your soil and situation, most of the more productive ones readily adapt themselves to all soils and conditions. Perhaps quality cannot be the first consideration of the market grown.

For market or shipping, all things considered Abington, Sample, Glen Mary and Senator Dunlap are a good combination. For the home garden it is desirable to consider quality, and Marshall, Brandywine, Cardinal and Wm. Belt will produce fine large berries of the best quality. Of course soil conditions should be considered to some extent and it may be best to try a number of varieties, and by degrees selecting the ones best suited to your individual needs. Before setting the plants in the bed trim off at least one-half of the leaves, and cut the roots well back, so that the new roots will get a good start. Do not set the plant any deeper than it grew in the original bed and be sure to firm the soil well about its roots. After the plants are set, keep the cultivator going and supplement the horse work with hand hoeings and weed pullings. Cultivation should continue until the middle of September and then the plants may be left to harden before cold weather comes. In many varieties numerous runners will have to be cut off in order to get a good fruiting bed later on, for if all the runners are allowed to set and make plants, the fruit will be small and poorly colored. Keep in mind that you want big, healthy crowns with plenty of air space about them, so thin out surplus plants and give those which are left your best attention; and the picking question, so troublesome in some places, will not be so much trouble to you, as one man can pick in a day, twice as many large berries as small ones. Protect the plants in the late fall with coarse litter or leaves, remembering that you do not want to keep the frost out of the ground, but rather in after it is once there, so cover lightly and remove the mulch in the spring as early as possible after danger of heavy frost is past.

At this time apply dressing of wood ashes and later on, if the foliage is deficient, a little nitrate of soda or guano at the rate of 200 lbs. of nitrate, or 40 of guano to the acre. Keep the cultivator going and remove all weeds until the fruit is formed, after which put on a mulch of straw, litter or leaves about the plants to keep the fruit clean and retain the ground moisture. This mulch will improve the fruit 50% and especially in a dry season when the plants need all the moisture they can get. Another advantage is that during rain the berries are kept from being spattered with mud or sand. Having brought our crop to this stage, go over the bed at least every other day and pick all ripe berries, breaking them from the plant with the stem. Use only new quart boxes which can be obtained as cheaply as old ones and it never pays to put good fruit in old boxes. Make two grades of fruit in picking, for there is always a demand for both kinds, and it will be found profitable to sort the fruit at the time of picking, letting each picker use two boxes. The berries should be kept out of the sun and removed to a cool place before being shipped. I might suggest that all picking should be done as early in the day as possible, before the dew is off the plants. The fruit is harder at this time and will carry better, and it is a mistake to think that strawberries will spoil when picked wet. I know the question of strawberry pickers in country districts is often a perplexing one, and perhaps explains in a large measure, the small amount of strawberries which are grown in these localities, so plan to make whatever ground you plant, produce a large crop of fine fruit and reduce in this way the amount of hand labor in the picking season.

If you are near a small city or large town you may not be troubled in this way and your acreage can be increased accordingly, but every one must be the judge of his own conditions. If your market is near by do not pack the best berries in crates, but have some long trays made to hold twenty or twenty-five boxes. The fruit packed in this way will not be crushed by the weight of the other boxes and will appear to a better advantage in the market. Your second class berries may be packed in crates, as they can be shipped to more distant markets if there is no sale for them near by.

For the home fruit garden it is often more convenient to plant pot-grown strawberry plants in the late summer or fall. These plants when grown in hills will produce a good crop the next summer.

The preparation of the soil for strawberries applies to all the small fruits, but it will be found of benefit to prepare the soil deeper for gooseberries and currants and while these latter fruits will do well in almost any soil, they are more profitable if given a deep rich soil with plenty of bone meal and wood ashes worked into it.

Raspberries and blackberries while not as important as the strawberry are worthy of more extended cultivation, and should demand greater attention from horticulturists. These fruits are not as hardy as the strawberry and therefore need more protection during our cold winters. It is often found necessary in sections where there is little snow to lay the canes down and entirely cover them with earth. The raspberry which is a very important crop in central New York, is grown too far from the markets to ship in the fresh state, so large areas are given up to the growing of raspberries for drying. The fruit is then sold at about 20 cents a pound, often returning the growers $350 to $400 per acre.

It would seem as if there were parts of this State where such an industry would be profitable. Both blackberries and raspberries are better grown about 6 feet apart each way, so that the ground can be more easily cared for and the first year at least some root crop such as carrots, beets or turnips can be planted between the rows.

Blackberries and raspberries like a good firm soil and do much better when planted on a hillside where the land is more or less springy. It is best to support in some way the fruiting canes of these bushes and a simple device for this is to drive a strong stake into the center of a clump of bushes, nail two cross arms on the stake and tie the canes to this stake. When the fruiting season is over remove all dead canes and burn them.

Varieties:—In raspberries, Cuthbert, Herbert and Worthy for red; Kansas, Gregg and Ohio for black; Columbian and Shaffer for hybrids; in blackberries, Snyder, Agawam, Ward and Dorchester.

At one time not long ago the gooseberry was almost unknown in many of our gardens, and hardly ever seen in our markets, and to many of us today it is a fruit unappreciated and neglected, but there is a future for the gooseberry. When it is thoroughly known it will outclass the currant in popularity and profit. We are only just beginning to realize its value. The gooseberry can be grown farther from a market than any other small fruit and yet be sold at a profit, for it is usually shipped green and there is therefore no loss in transit. Gooseberries seldom sell for less than 10 cts. a quart and as 10 quarts can be grown to a 4-year-old bush, you can readily figure up the profits from an acre of this fruit when the bushes are set 6 by 8 feet apart, making about one thousand bushes to the acre. Gooseberries may also be set among your young orchard trees, thereby giving an additional value to the land. Currants may be set in the same way but being a more perishable crop could not be marketed so readily, though the fruit can be used at home in the making of jelly, etc, which can be sold to the city people who are willing to pay a good price for a pure article. Many of the farmers' wives in New England are getting a very good income from the preserving of fruit which they sell at a profit even greater than the fresh fruit.

Both gooseberries and currants need careful pruning and care to get the best results. All three year wood should be removed from the bushes and just enough new canes left growing to insure the life of the bush. For varieties, Fay's Cherry and Perfection in currants are best, Downing, Triumph, Chataqua, Industry and Red Jacket in gooseberries.

Insect and Fungous Pests:—Probably the small fruits taken as a whole, are freer from insect enemies and diseases than any other class of fruit, but it is also true that they have very serious enemies which need careful attention or the crop will be ruined. The strawberry is attacked by a white grub and the root of the growing plant eaten off before you know anything is wrong. This pest can be controlled by a rotation of crops, never allowing strawberries to follow grass or potatoes without some other crop between. Leaf blights and rust can be prevented by spraying with Bordeaux. Currants and gooseberries are both attacked by the currant worm and what is far worse the San Jose scale. The former can be killed by use of arsenate of lead or hellebore; while the latter requires more stringent methods.

An application of lime sulphur and salt or some of the more recent soluble oils is found to be efficacious. Raspberries and blackberries are both much benefited by spraying with Bordeaux for leaf diseases, but where rust appears the diseased cane should be cut out and burned and in bad cases the roots and all dug out and destroyed. All small fruits are greatly helped by spraying with Bordeaux, even if no disease is apparent and it certainly pays, for in the increased vigor of the plant or bush will come a corresponding increase in size and beauty of the fruit.

Keep it in mind that to get large, fine fruit, you must have plenty of sun and air about the plant. Spraying and pruning must be thoroughly attended to and above all, the cultivator should be kept moving among the plants and bushes in the warm summer months.

Not alone should these small fruits, which add so much to the joys of living, be grown for mere profit, but also for the pleasure and experience that one can get from a healthful occupation in God's open air.

Many of you are, no doubt, often at a loss to give your boy an interest in the farm work. You often see him drifting away from the farm to the factory, to the city and to the mill, when if the farm had been made more attractive he would, no doubt, have become attached to the place and staid at home in a more healthy, moral and physical atmosphere. Right here I believe that the small fruits have a mission for the farmer's boy and can be made more interesting than the growing of hay, corn and potatoes and the child can begin with them when he is quite young. So set aside a place on the farm and give it to your boy and let him till this plot and have the income from this bit of land as well as the fun of growing some nice fruit for the table.

A CONVENIENT AND PROFITABLE HOME MARKET.

GEORGE W. PERRY, CHESTER, VT.

Horticulture is an art, just as much as sculpture or painting or music, though much more commonly possessed; and horticulturists, like painters, sculpters and musicians, are born not made. You all know of certain women in every neighborhood of whom it is said that "they have only to look at a plant and it blooms; everything they touch grows". There are men who have but to tickle the ground with a hoe, and almost anything they want comes forth. Just as the painter with his art makes the canvas and paints into a picture that speaks, that stirs your thought and feeling and enthusiasm, and then may be starving because he cannot sell it, so the horticulturist with the assistance of the soil, the sunshine, the water, and that wonderful germ of life that is in the seed, produces the wonderful things we call fruit and vegetables, and then is miserable because he can't sell them at a profit. The marketing of our products is quite as important as the raising of them.

This home market that I am to speak about is in many ways a very good thing. In the first place the customers come to the farm for the goods; you don't have to carry them to the town or railroad station. Then they take a regular quantity every day, Sundays and all; and, if you haven't exactly the things they want today, they will take something else. You don't have to buy boxes or barrels to put them in, for they provide their own packages. Then too, they pay you a good price for the products. This home market is the *summer boarder*.

The subject is naturally treated under three different heads, the equipment, the guests, and the profits.

In the equipment there are three or four essentials and as many desirables. The first essential is the possession on your part, and on the part of your wife or husband, of a pleasant, patient and pliable disposition. If you are obstinate or cross, (excuse me I should say in these days irritable) or uppish, or, to sum it all up in one word, cranky, you will not succeed in keeping summer boarders, you may *get* them but you won't *keep* them. You must not, however, be of a too easy-going disposition; you must have energy and industry and positiveness, in fact you must have all the qualities necessary to success in any business that brings you into contact with the public.

The second essential is the ability to cook and serve simple food in an attractive and appetizing manner. In this line there are three items that one must have, to please city people, good bread, good butter, good coffee. On nine-tenths of the farms in Vermont two of these, the bread and coffee, are never good. Yet any competent woman can learn to make them well in two days time. The third item, good butter, you can always buy in Vermont, though some of our first class hotels don't seem to know that.

The next essential is a comfortable house, with good grounds about it. It need not be a new one; in fact it better be old, if it is kept tidy and in good repair, and has good big rooms in it. It will suit better if the floors are painted, with strips of carpet or cheap rugs. The rugs made of carpet rags on a hand loom, such as may be had in many Vermont towns, have a charm for city people. Almost all carpeted rooms in farm houses are stuffy. You want the windows open wide, of course screened, night and day. Nobody is going to steal you, let the night air in, keep the house fresh. Don't buy new and costly furniture. In fact the class of boarders I am going to talk about, the older the furniture is, so long as it is in good repair, the better they like it. The beds must have good springs, of course, and mattresses, not feathers; but, if you have a very old fashioned bedstead, the women from the city will almost fall down and worship it. And that old washstand up in the attic they will call a "dear" and the "cutest thing in the world". All of these things must be neat, tidy and comfortable; and every part of the house, except the private bed rooms of the family, must be open for inspection. You need not think you can keep the boarders out of the kitchen, they will be in there the very first day. Outside the house you must have ample grounds with plenty of shade, for these people have come to live out of doors, not in the house. They want to be under the trees, and you must have plenty of places where they can swing in hammocks or lie on the grass. An old apple orchard is a most charming place. Put it into grass and keep it mown short, and what a place it is for hammocks. Last fall I went past a great brick house that some one had just fitted up for summer boarders, and it was well adapted to the purpose. As there was but little shade about the buildings, they had wisely built a broad veranda across the front. Yet at the end of the house, and fronting on the highway, was a little old apple orchard with low growing trees, just the place for taking comfort. But they had fenced it in and made it into a henyard; every blade of grass gone, and not the sweetest perfume in the world floating up to the piazza and into the windows. When they have had a little experience they will know better than that. But there are senses besides that of sight that you must provide for. On my first visit to Grand Isle, to attend an Agricultural meeting, I was entertained at one of the best farms on the Island, where old-fashioned hospitality was still in vogue. The Governor and myself had adjacent rooms on the ground floor at the end of the house. About two rods away was a stragling row of cedars, forming what is called in that region a windbreak. This was the favorite roosting place for all the fowls on the place, and about 3 o'clock in the morning they began their morning song. There was one old rooster whose head, when he was in operation, reached up to the window sill; and about once a minute he let off a roar that almost shook the house. When we were eating our fried chicken for breakfast, the lady of the house asked the Governor if his was cooked to suit him; and he replied "that it was exactly right, but he would esteem it a special favor if we could have for breakfast the next morning, that particular fellow that crowed under his window all night". When you go into the city and walk along the streets you are assailed by smells, escaping gas or sewer gas from the catch basins, or the odors from the different factories. The city people do not notice them, for they were brought up on these smells and don't know they are there. Now when these city guests come out to your farm, and go along the highway, they exclaim with delight at the perfume of the red and pink and white clovers that everywhere line the roadside; they inhale with pleasure the fragrance of that great patch of dandelions, which, touched by the morning sun, have responded by reflecting his glory, turning the field that last night was emerald green, into cloth of gold; they stand and drink in the peculiar odor that is brought on the wings of the wind from the field where thousands of daisies lift up their gold and silver crowns to the sky; and they tell you of the charming scent of the pines and the cedars as they pass them by. Yet you do not notice these odors at all, because you have become so used to them. But there are other country smells to which you have become accustomed, and therefore do not notice, that are not as pleasant as these; the odor of the sink drain, the barnyard, the pig-pen and the henyard, (I suppose I ought to say piggery and perhaps hennery). All of these should be put, in the language of President Cleveland, into inoccuous desuetude. I knew a man once who had a whole house full of summer boarders, and he put twenty hogs into the pasture opposite the dining room. The boarders didn't stay, they couldn't.

The next essential in the equipment, is a garden with fruit and vegetables of all kinds; and the vegetables should be of the best sorts. There is as much difference between the golden bantam corn and the sorts we raised ten years ago, as there is between the northern spy and Ben Davis apples. The old garden beet is no more like the ruby dulcet than is the broncho like the Empress Alexandra that brother Phelps drives. Allow the guests to go out and pick fruit for themselves, as much as they want, too. If they fill themselves full of plums, they will not eat as much beefsteak. A city dweller does so enjoy throwing up a stick and knocking down a plum or an apple, or picking strawberries or raspberries.

In addition to these essentials, there are some desirables worth mentioning. One is an expanse of water for boating and bathing. People will sit all day and look at the water in motion, and it is wonderful what a passion city people have for getting into it. Another is a piece of native woodland. Clean up a part of it, but leave the most of it in its native wildness, and let the birds and ferns and flowers have their way in it. No city park can be made as attractive to the town dweller. I am inclined to add one more desirable, a safe and lazy horse, so safe that any one who can hold reins can be trusted with him, and so lazy that he cannot be overdriven on the hottest summer day.

It is about time I came to the guests. I accidentally got into the summer boarder business. I bought a piece of land 17 years ago on Grand Isle, and fitted it up for a boys' camp, and ran it several years, until failing health made it impossible for me to have the charge of a lot of lively boys. I continued to camp there with my family; and, as we had the equipment, some of our friends teased us to take them in. In order that they should be as little trouble to us as possible, we kept the same regulations that we had in the boys' camp. Instead of keeping people out, these regulations brought them to us, and taught us there is a large class of people who desire to spend the summer in the country for whom no provision is made. You can get any class of summer boarders you please, if you use the right bait and tackle for them. There is a very undesirable class whose lives are dull and tame in the city, and whose living is very scant. When they go on a short vacation, they are looking for entertainment, for excitement and for good things to eat; and they will criticise everything they find. Let the cheap hotel, with its piazzas arranged for flirtations and with ts dances two or three times a week, take care of them. There is another class, the cultured people who are engaged in the activities of life, who want to get out into the country for rest and quiet; who simply want the fresh country air, the sunshine, and the blue sky; who want to hear the birds and the wind in the tree tops, and the sound of the waves upon the shore; who want, in hackneyed phrase, to get close to nature's heart; as her children, they want to refresh themselves once more at mother Nature's breast. They do not want to be amused or entertained or instructed, but only to be let alone. They want a simple diet, fresh eggs, good milk and butter, vegetables right out of the garden, fruit right off of the trees or vines. I found there was little provision made for this very desirable class of people; and, as soon as I discovered that, I went at work on a little circular to send to them, and this is what I baited the hook with:

"No glare of electric lights, but the beauty of the moonlight and the glory of the stars.

No everlasting banging of the piano or blare of the band; but the music of the waves upon the shore, the murmur of the wind in the tree tops, and the morning and evening song of a thousand birds.

No midnight tumult of human voices, but quietness in which may be found the unbroken sleep of childhood.

No stately parlors with dusty carpets; but all out-of-doors for a parlor, carpeted with fresh grass, and adorned with trees, ferns and flowers.

No effort to outshine others by the display of showy apparel and costly adornments, but the companionship of sensible, refined and cultured people."

This condition of things was secured by adopting the motto, "Style is Dead, Comfort is King", and by the following regulations, strictly enforced:

Everybody on the grounds, including the proprietor, to keep his mouth shut and remain perfectly stilll from ten o'clock at night till six in the morning. Every one required to come to meals at the blowing of the bugle, and get their coffee fresh made, and their peas and corn just off the stove. Sunday should be Sunday, no games to be played, and nothing allowed to disturb the quietness of the day.

This brings me to the last item, for which you have been waiting so long, the profits. I will speak of the financial profits first. Oh yes there are other kinds, even if you did not think so. If you feed the people with simple food, allowing a fair price for the products of the farm, it will cost you for this about two dollars a week for each person. The preparation of the food and the care of the guests in other ways, allowing one helper to every five boarders, will come another dollar; and the wear and tear of everything will be another. The actual cost of boarding these people will not be far from $4.00 a week, and that will leave you three or four dollars a week profit on each person, for no one should think for a moment of taking them for less than $7.00 or $8.00. If you have ten boarders for ten weeks, you have a clean profit of at least $300.00, besides the sale of your farm products in this home market.

There is another kind of profit, and a very much more important one. You have learned to cook a greater variety of food and to cook it better, and somehow you will enjoy it yourselves all summer long; and, if you are not a fool, all the rest of the year, too. Then too, you will enjoy the clean, fresh house; you won't get the windows shut down quite as closely again; you'll take pleasure in the neatness of the yard, the shade of the trimmed up trees, in the general tidiness of the premises; and when you drive home at night you'll say "That's a pretty slick place, that belongs to me".

There's a better profit still. These cultured guests will bring into your family their games and plays, their music and magazines and books, their fancy work, their conversation about the great things of the world; they will bring something of that marvelous breath of human life that is developed only where men do dwell thickly together, and your life will be brightened and deepened and broadened by it, and made far more interesting to yourselves and others.

Finally, if there is anything in you worth their while, and there may well be even though you are poor or ignorant, you will find among these city guests, perhaps, a friend, the most precious thing in the world. You will enjoy this friend more than some you have known all your life, and who live near to you. And all winter long letters will come and go, and little tokens from the country will be exchanged for keepsakes from the city; and you will be looking forward to the time when the summer will bring your friend again.

If you have succeeded in this business of keeping boarders, you need not worry about the supply of guests for next year, for these will come again and bring their friends with them. In the midst of the clang of the trolley cars, the chug of the autos and the rattle of the wheels over the pavement, they will think of the quiet days and nights on that little farm, And, when summer makes its first fierce onslaught the latter part of June, as it is sure to do, then they will think of the coolness and freshness of that country home and they will say to themselves,

"The heart of me is longing for my own, own place,
I'm tortured by the stifling heat, the dizzy, headlong pace,
Oh for the touch of soft, cool grass about my tired feet,
The breath of pine and cedar blown across my weary face,
The lip-lap of the water, like a little song and sweet,
And God's green grass and God's blue sky above me for a space."

VEGETABLES FOR THE HOME.

J. OTTO THILLOW, PHILADELPHIA, PA.

This department of the home—the vegetable garden—is usually assigned to some remote part of the place if possible, for several reasons, 1st, the unsightly appearance of weeds; 2nd, the over-growing weeds, decaying vegetables and tall corn and bean poles. In a properly conducted garden these conditions should not exist, particularly that of weeds and decaying vegetables, and as for the corn and lima beans, the ears of corn will all be ripe and pulled before any part of the plants shows turning of color—a green corn plant is not unsightly. Lima beans can be grown the same as grapes, on wires drawn along posts set 8 feet apart—and need not be over 6 feet high—the bush lima has filled a long felt want in this direction, so a vegetable garden properly laid out and operated with system, is as attractive as a flower garden would be. While it produces no flowers to attract attention, yet the order and precision, the succession of crops, and the general layout is not only attractive but also interesting.

Select, if possible, a plot which lays toward the south, southeast or southwest, with exposure entirely to sunlight, proper drainage is necessary, either natural or artificial. Prepare much in advance, to allow for modification and changes, make the plan, lay out according to the varieties to be used, an abundance of such as are desirable and liked and a limited supply of the less desirable ones. Avoid following root crops with those of same character, viz; do not sow turnips where beets have been, or carrots and parsnips after radishes, root crops succeed better after beans, because of the nitrogenous nature of bean root. This is not only a good rule for the same season, but holds good from year to year or rather from one season to another.

So much has been written on the planting and sowing of the vegetable garden, and plans have been submitted in the magazines, cultural directions well defined, yet while they are a benefit to the average home gardener, they cannot be applied to every condition. Space will not always permit to do all one would like to do, yet if it is possible, grow all the vegetables that are needed for the whole year, the roots can be buried during winter, such as parsnips, carrots, beets, salsify, turnips, celery, lettuce and parsley are the easiest to grow, but the conditions for keeping are the most vital.

Know where every variety is to go throughout the season, have a plan to indicate each and the quantity, one year's experience will indicate the quantity of each and especially of the sorts most used, and less of the undesirable sort, this will save labor and expense. If possible, at the opening of spr ng have the ground plowed and harrowed, and prior to this, say any time during winter, spread the manure evenly over the whole area, so when it is turned under, it is evenly distributed and supplies food and moisture uniformly.

After plowing a coating of commercial fertilizer, say bone and potash, evenly distributed will stimulate the growth and produce not only earlier, but establish the vegetables for the summer weather. A thorough harrowing is essential before any seed is sown.

Where plowing cannot be done, spading will do as well; and raking as well as harrowing. Under no condition have the ground broken while it is wet, the effects of this will be felt through the whole season, it pays to wait with the spring work until the soil is in proper condition, this can be determined by squeezing a handful of the soil, if it cakes and appears sticky, then it is unfit to work, it should be dry and mealy, or partially so. The next requisite and indispensable adjunct is the garden line, by dividing and subdividing and using the line, the garden can be laid out at the beginning of the season and so continue throughout, it not only presents order and uniformity, but makes the labor of weed killing easy, cultivates evenly and creates system. Seed catalogs of the present day are explicit in their description of each variety of vegetable, designating planting time in the different localities as well as thorough cultural directions. These instructions are often overlooked, and sowing and planting is done as many think is about right. It takes usually two seasons to learn the methods and proper quantities of each type to sow, and space allotted for each. Cultivating should begin at the first appearance of weeds and kept up through the season and done only when the foliage is dry.

Permanent or perennial crops such as asparagus, horse radish, herbs and rhubarb should be together in one part of the garden occupying an even space all the way across the garden, preferably in long rows. This last should be an inflexible rule with everything that is sown, it simplifies cultivating whether by hand or horse, the plants grow better and more evenly, the crops can be harvested with more ease. Should one long row be too much space for one variety, say of beans, use the green and wax sorts in the same row, early and late sorts likewise. The same is applicable to beets, carrots, cabbage, corn, cucumbers, lettuce, melon, peas, radish, squashes and tomatoes. Some of these can be grown and produce their full crop, cleaned off the ground and followed by other and late crops, viz; corn, peas, beans as snapshoots and also for shelling, late beets, cabbage, carrots, cauliflower, celery, cucumbers for pickles, endive, kale, lettuce, parsnips, peas, radish, spinach and turnips.

In sowing use judgment—more seed goes to waste and poor results are oftener achieved through deep sowing than of shallow—mark out the rows on the level ground, so that after sowing and covering the ground is level, if soil is very light a good rolling after sowing is beneficial, if heavy—use the back of rake after seed is covered.

It is not necessary to place each bean with eye downward and evenly spaced, but sow them from the open hand, let them fall thinly in the row—cover shallow in early spring and deeper as the season advances. This insures quick germination, when beans are above ground in the four leaf—draw the soil up to them on both sides of the row, this is the rule for beans, as they suffer from too much moisture.

In this latitude, sowing and planting may be begun March 20th with extra early peas, beets, celery, carrots, leeks, lettuce, onions, parsley, salsify and spinach. April 1st to 5th wrinkled peas, parsnips, radish turnip and plants of cabbage and cauliflower. April 15 to 20 beans of all kinds and corn. May 1st to 15th egg plant, cucumber, melon, pepper, squash, pumpkin and tomato. Beans can be planted ten days apart until Aug. 15th; peas every week until June 10th; extra early sorts from Aug. 10th to 20th, the last planting to be made with second early sorts. Lettuce can be sown as late as Sept. 10th, radish Sept. 15th, spinach for fall and spring Sept. 15th, beets and carrots for winter use July 20th.

To take advantage of outdoor conditions, a frame of from 2 to 6 sash will be not only profitable but quite a luxury. The following method is practised by many private gardeners in the northern districts and the mountains where the season is short. Sods three inches thick and six inches square are laid grass side down close together in the frame on leveled soil, the centre is scooped out with a trowel, a handful of well prepared light soil is put in the place, the seed of either lima beans, cucumber, melon, squash is placed in this, in from two to four weeks each piece of sod will have several well established plants. These are transplanted to the open ground when danger of frost is over, thus avoiding chilly nights and cold rains of early spring. This operation is begun three weeks to a month ahead of open ground work, as they can be protected on cold, nights, the same has been done with corn. The sod is suggested because it not only lays close in the frame, but obviates disturbing the plant at all at planting to open ground. Celery was formerly sown in open ground in April and May—now it is sown in frames in Feb. and March—planted out in April and blanches by July and August, later planting coming in succession.

Large trees in close proximity to a garden are objectionable, they not only shade but impoverish the soil by their feeding roots. If the shade cannot be avoided, a few vegetables will do fairly well, such as brussels sprouts, broccoli, cauliflower, chives, celeriac, cucumbers, endive, radish and rhubarb. Corn and lima beans planted in rows running north and south will not shade smaller vegetables. A frame of from 2 to 6 sash is a valuable addition and can be kept in constant use through the season, early vegetables can be started and very much advanced for planting to open ground when weather will permit.

MR. VAUGHAN:—It would be well to have as a member of the committee who is to prepare the bill to present to the legislature, one who has had experience along such lines, and I would present and suggest the name of George Terrill of Morrisville.

Duly seconded and carried.

SOME OF THE INFLUENCES AFFECTING FRUIT PRODUCTION.

W. T. MACOUN, HORTICULTURIST, CENTRAL EXPERIMENTAL FARM, OTTAWA, CANADA.

While there is much that is known regarding the influences affecting fruit production, there is still much to learn. The following information is presented in the hope that it will cause fruit growers to think more about the principles of fruit growing than they have in the past, for if principles are clearly understood, practice is made easier and more successful. These influences may be grouped under five headings: Production under Natural Conditions: 2. Effect of Climate and Soil: 3. Effect of Plant Food and Tillage: 4. Effect of Pruning: 5. Effect of Grafting.

Seed Product in Nature:—The principal means of reproduction in nature is by seeds, although plants frequently increase by their vegetative parts as well. In nature, individual plants do not necessarily produce their maximum crops, for in the struggle of many species for existence individual specimens may often be so crowded that they have little opportunity of producing much seed. Under cultivation many plants will produce much more seed than in nature, while others will scarcely thrive at all, or fail utterly. Plants may be divided for the purposes of this paper into "Shade Enduring", "Light Enduring", "Shade Needing", "Light Needing".

Plants which need shade will not endure bright sunlight, hence many wild flowers growing naturally in very shady woods soon die if exposed to bright sunlight. On the contrary, plants which need light will soon die in dense shade. Examples of these are the birch and poplar, which, when they have abundant light, grow rapidly, but if shaded will soon die. Then there are the shade enduring trees, such as the spruce, cedar, beech and hemlock, which will live for years under dense shade; and there are the light enduring species, such as some of our wild flowers, which succeed best in shady places, but will also thrive well in bright sunlight.

Plants which grow naturally in shade are not great seed producers, but to make up for this they often increase very rapidly by offsets, layers and suckers. It is interesting to note that a large proportion of the plants in woods are spring flowering species which bloom before the leaves of the trees are fully out and before there is dense shade. Most plants need abundant sunlight for great seed production as it is through sunlight and by the aid of the leaves that the nourishment necessary for the production of seed is secured. For example, take the weeds which are great seed producers. Of the many plants which have become weeds in Vermont there are very few which are native of this country, as most of our species are woodland plants and also do not succeed well in the open, while the introduced weeds have been grown in open ground for centuries. The asters and golden rods which are abundant seed producers are native plants. These grow naturally in meadows or open woods where they get much sunlight.

Most of our cultivated fruits are light needing plants thriving best and producing the largest crops in full sunlight, and the foregoing information has been given with a view to impressing this fact on fruit growers.

Plants take food from the soil and air. From the soil the plant food passes up through the young wood in crude sap which on being distributed through the leaves is changed by the action of sunlight and other agencies and becomes what is known as "elaborated" or made fit to add new tissue to the plant. This elaborated sap returns between the bark and the young wood and is distributed over the plant as required. It descends to the roots and in the case of herbaceous biennials and perennials it accumulates there and this plant food is stored up and made available for leaf or seed production the following year, as in the beet, turnip, carrot, mangold, and onion, which in order to produce a good crop of seeds must have abundant foliage the previous year. It is our belief that when shrubs and trees have accumulated a certain amount of this elaborated sap they are induced in nature to bear fruit, but just what proportion of such sap it is necessary for each tree to have is not known. What is known, however, is that certain methods of cultivating fruits will induce fruitfulness. Most fruits require bright sunshine for the development of fruit buds, but with the sunshine there must be an abundant supply of leaves to convert the crude sap into the elaborated form.

There are many examples showing that when a certain proportion of elaborated sap is in the branches of trees that fruit production will follow. If a branch of a tree is injured in some way so that the flow of elaborated sap downward is checked, it accumulates in the branch above, and that branch having more than its proportion develops fruit buds. When the roots of a tree are severely pruned and the flow of sap downward and into them is checked, the top has a larger proportion of elaborated sap than is necessary for the development of leaves merely and it develops fruit buds. A spell of dry weather at the right time in summer will probably induce the production of fruit buds as growth is checked, and there is a larger proportion of elaborated sap available than there would otherwise be. When one variety of fruit is grafted on another the sap at the point of union is more or less checked in its downward course and the top retains a larger proportion of elaborated sap than it needs for its healthy development and fruit buds are produced before they would if the tree were grown as a standard tree. Some plants and some varieties take longer to come into bearing than others, but what the vital principle is which governs this is not known, but it is evident that just as soon as there is a surplus of elaborated sap then fruitfulness is induced, hence methods of cultivation should be adopted which are known to induce fruitfulness.

If it has been shown that sunshine and leaves and a certain proportion of elaborated sap are necessary for the development of fruit buds, the methods of obtaining the right proportion of leaves may be discussed, but before doing so the questions of climate and soil should be considered.

Climate and Soil:—In considering the suitability of the different kinds of fruit for the districts in which we wish to grow them, the question should be asked where did these fruits originate? Or where is the native home of the original forms from which these fruits developed?

The gooseberry, the currant, and the raspberry are all natives of the colder parts of the world and it is found that the cultivated varieties succeed best there. In warm countries, gooseberries, currants and raspberries do not do well. Moreover, the gooseberry and currant grow naturally in moist soil and when cultivated, especially near their southern limit it is very important to plant them in cool, moist soil that they may get as nearly as possible the soil conditions they have in nature.

Most of the cultivated varieties of strawberries have evidently the blood of the Chilian species which requires moisture and comparative coolness to do its best, but not very low temperatures, hence we find that the best strawberries are produced where the atmosphere and soil are comparatively moist, but the winter temperatures not low. In America most of the cultivated varieties have more or less blood of the native species, hence they succeed where the temperature is quite low.

The grape succeeds best in nature in warm soils, hence to get best results we plant in gravelly or sandy soil.

The peach and cherry are comparatively southern fruits and do best in the north, especially, on the warmer and lighter soils where the conditions will nearest approach those in their native country.

The Domestica plum had probably a more northern origin than the peach and cherry, and will succeed in colder soils than the peach and cherry.

The pear and apple are still more northern fruits, the wild pear being found as far north in Russia or Siberia as latitude 51°, and the wild crab apple still further north. The wild apple is not, however, native as far north as the crab apple. The apple and pear in nature having a wide range from north to south, the cultivated varieties vary much in hardiness, a great deal depending, doubtless, on the source from which the varieties sprung. If, as seems the case with the pears, most of the cultivated varieties sprung from a rather southern source, they are not so hardy as they would be if developed from a more northern one.

Towards the northern limit of cultivation in America the cultivated apples do best on the warmer soils with well drained subsoil, but further south where the subsoil is not so cold, apples are very successfully grown on clay loam. Some varieties of apples will succeed better on certain soils than others. Apples having a considerable proportion of crab blood are likely to succeed on colder soil than those having a smaller amount.

Good examples of the change of soil that plants need as they go northward are found in the native trees. Take as an example, the hard maple which as it reaches its northern limit climbs to the hill top where the soil is warmer and better drained.

Plant Food and Tillage:—The relation of the supply of plant food to fruit and seed production should be, and is, of the greatest interest to fruit growers. Plant food, however, is of little value unless there is moisture and heat. Some kinds of fruit require more moisture than others, and some more heat. It has been already explained that the place of origin of the original type may have much to do with the kind of soil that they will do best in.

While there is vigorous growth there is usually little seed production. Herbaceous plants, as a rule, have made most of their growth before they bloom. Woody plants also have made their strongest growth before they begin to fruit. An excess of a nitrogenous fertilizer induces an abnormal vegetative development and this is taken advantage of by man where the vegetative part of the plant is needed for some special purpose. The large amount of nitrogenous plant food near the surface of the soil in nature is, perhaps, an important factor in inducing vigorous growth to the exclusion for a time of the fruiting tendency. In cultivating fruits it is important to have a good supply of nitrogen in the soil when the trees are young in order that the vegetative habit natural to young trees should be encouraged, as to get good crops of fruit in the future there must be a good sized tree to bear fruit. As has been stated before, plants must have good foliage in order that sufficient sap may be elaborated to cause the development of fruit buds and the maturing of the fruit. Heat, moisture and plant food are all necessary in order that we may get good foliage. The question of heat is largely a matter of climate, although, as has been stated, planting the fruits on warmer soils in colder districts overcomes the change in climatic conditions somewhat. Moisture is very important in the development of leaves, although too much of it is almost as bad as too little. Healthy and abundant foliage can be produced and maintained, providing other conditions are favorable, by methods of cultivation which will either conserve or exhaust moisture, depending on the abundance or lack of it in soil.

Plant Food:—The effect of different kinds of plant food on seed production has been worked out very well in the case of most agricultural crops, but not so thoroughly in regard to fruits. It has been stated that young trees appear to need a larger proportion of nitrogen for their development than older trees, but without a good supply of nitrogen, older and fruit producing trees would not maintain their vigour, hence it is necessary to maintain a sufficient quantity in the soil. Phosphoric acid and potash are needed in relatively larger quantities for bearing trees than young trees, hence these forms of plant food must not be neglected. The analysis of the fruit and leaves gives us some idea of how much of each kind of plant food is taken from the soil, hence it may be restored by judicious application of fertilizers containing these forms of plant food in the right proportions.

Pruning:—The principal objects of pruning are to maintain a good shaped tree, to let the sunlight into the tree, to direct plant food into the branches on which it is desired to produce fruit, or in other words to obtain the largest crops of good fruit. If the branches of a tree are reduced in number the roots, which have taken in the sap for the larger number, will continue to supply sap to the smaller. If the pruning has not been very severe there will not be many new branches formed, but the leaves on the remaining branches will be larger. If trees are pruned severely in the dormant condition, the tree, in order to maintain the nice balance between top and roots, in nature will develop sufficient new branches to obtain this. This is sometimes desirable, especially in older trees, as the excessive growth is but temporary, and afterwards if the pruning is done judiciously there will be better wood for fruit production. Summer pruning evidently induces fruitfulness, partly because when branches are removed when the tree is growing there will be more elaborated sap to accumulate in the top of the tree than is necessary for the maintenance of the vegetative parts, and fruit buds are formed. The tree also doubtless receives a shock when pruned in summer which checks the growth, and there being more plant food in the tree than is needed for the vegetative parts fruitfulness is induced. Root pruning, as has been previously stated, also induces fruitfulness as it appears to cause an undue amount of elaborated sap to remain in the top.

Grafting:—Grafting induces fruitfulness, apparently for the same reason as summer pruning and root pruning, and we graft certain varieties to have them bear earlier than they otherwise would do. The flow of sap not being so free between scion and stock the elaborated sap is retained longer in the top than it would be when grown as a standard tree and the surplus food thus accumulated is used in the development of fruit buds. The greater difference in growth between stock and scion, the earlier will be the development of fruit buds, as a rule. If, however, the union is poor and the difference in growth too great the tree may die. The Paradise stock is a striking example of a stock which makes much slower growth than the scion, yet makes a good union. On this stock, trees will fruit much earlier than on strong growing stocks. It is not, however, always desirable to have this extreme early bearing, as often with it comes lack of vigour, which makes them more subject to insect pests and perhaps other injuries. Binding, ringing, and mutilating branches all act in the same way as grafting and induce earlier fruiting.

Spraying:—The importance of spraying in order that the leaves will not be injured and prevented more or less from elaborating plant food, part of which is to be used in the production of fruit buds, should now be readily seen. Trees which have been defoliated for several years in succession become very much weakened and their power of producing fruit much lessened. They will also die if the foliage is constantly destroyed.

Importance of Sunlight:—The importance of sunlight in fruit development has already been dealt with, but in addition it may be said, as is well known, that the crowding of trees and shutting out the sunlight from the side branches causes a poor development of fruit buds.

The details regarding influences affecting fruit production and the many principles not dealt with in this paper would fill a large volume, but it is hoped that the information given will lead to more study of this interesting and important matter.

"PRESENT STATUS OF SAN JOSE SCALE INFESTATION IN VERMONT."

W. STUART, BURLINGTON.

The present status of San Jose scale infestation in Vermont is somewhat better than that of a year ago, as reported at the Society meeting. The writer visited the orchard of Mr. Emerson of Thompson's Point, early last summer and made a somewhat careful inspection of the infested trees. At that time there were less young scales than during the preceding season and it was thought that a large number of them had been killed during the past winter. In conversation with Mr. Emerson the writer was informed that he had already made arrangements with a professional sprayer from Boston to spray all the infested trees thoroughly, in the fall, after the leaves had fallen.

A few weeks ago, not having heard in the mean time, that anything had been done by Mr. Emerson, except very indirectly, the orchard was again visited and it was found that all of the old trees had been cut down and burned up. There were however, some thirty or forty young trees, some of which had been planted last spring, still remaining in the orchard. An examination of all remaining trees revealed the fact that only three or four out of the whole lot were actually free from scale, showing that, even though clean trees were planted in the spring, practically all of them were more or less infested during the first season. This furnishes additional evidence of the rapid spread of scale throughout an orchard, when a few trees in the orchard are infested.

At the present time these trees, according to information given by the superintendent, have been thoroughly sprayed with one of the standard, soluble oils and it is the intention to give them another spraying next spring, before the buds begin to swell. If this work is thoroughly done and a spring application is made, it is believed that practically all old scale will be eradicated from the young trees. There are some half dozen trees, however, on which it is quite likely a few scales will escape being hit by the spraying materials and it would seem advisable that a careful watch be kept on these suspected trees during the coming season. If young scale make their appearance, the writer would advise that all infested trees be at once destroyed.

Careful examination of adjacent orchards and scattering roadside trees have not revealed the presence of scale in a single instance.

PRESIDENT KINNEY:—I think the exhibits are as good as we ever have had; they are not as large as a year ago; the officers having the matter in charge were not expecting as good a showing as we have at this time, so we are very much gratified to have the fruit and all exhibits so much better than we expected. A circular was sent out asking the farmers and horticulturists to look out for and select specimens early in the fall while they were picking; we wanted every person to prepare himself early in the season; it is impossible for me to go into my storehouse and get good specimens in the winter season; the time to get them is in the fall at picking time. We have a grand exhibit of flowers; we want them with us every year; I am sure the executive committee will arrange for that in the future; we need them for adornment of the hall also, and that is a matter I neglected to speak of in my address; we need flags, pictures, emblems, something to put on the walls, showing that we are a solid and flourishing Association and backed up by the State; we need these emblems, and we are going to have them by and by Now as to the time and place for holding our next annual meeting.

MR. PERRY:—I move the time and place of the next meeting be left with the executive committee.

PROF. STUART:—In connection with the place of holding the next meeting, there is an invitation here from A. A. Halladay and his son of Bellows Falls, to hold the next meeting there; they promise to make the meeting a successful one if we come.

MR. WHEELER OF MASSACHUSETTS:—A suggestion in regard to future meetings: I believe there should be some part of every meeting devoted to the relation of birds to fruit culture. I think it is a good idea to secure the services of an ornithologist to speak upon this subject, as very few people understand how important this matter of birds and fruit raising is.

PRESIDENT KINNEY:—We had engaged a speaker on this subject,—one of the best speakers in the line, but he was one we had to leave out, not because his subject was not an important one, but because he was the last on the list, and our program was over full. We are pleased that so many friends from other states are willing to come here and help us in the different lines, and we thank them for their assistance. We are glad indeed the Governor has been with us, and we thank him for his suggestions and ideas, and appreciate the interest he has in us as an organization, and especially what he has done in the way of stamping out the San Jose scale.

MR. PERRY:—There is another scale to be looked out for. I found it on my plum trees last spring, some that I dug from an old orchard on Grand Isle; I sent a specimen to the Agricultural Department at Washington, and the head of the department declared it was San Jose scale. It is a great mystery to me how it happened to be on the trees. (The scale mentioned was not the San Jose scale, but a closely allied species.—Sec'y.)

PRESIDENT KINNEY:—I imagine it was on account of the beauties of nature and good food that he has at his place that this scale found its way to Brother Perry's place.

We will now adjourn the meeting.

Upon motion made by Mr. Perry, duly seconded, the meeting adjourned.

PREMIUM AWARDS IN CLASS I. APPLES.

BEST PLATE EXHIBIT OF

VARIETY.	FIRST PREMIUM.	SECOND PREMIUM.
Arctic	D. T. Trombly	W. C. Holcomb
Bailey Sweet	L. H. Sheldon	W. C. Holcomb
Baldwin	C. S. James	Geo. H. Wright and Sons
Bellflower	S. G. and H. S. Macomber	R. H. Bristol
Bethel		L. Putnam
Ben Davis	W. C. Holcomb	D. T. Trombly
Blue Pearmain	R. H. Bristol	L. Putnam
Chenango	R. H. Bristol	
Chateaugay		L. Putnam
Fallawater	C. S. James	W. C. Holcomb
Fameuse	R. H. Bristol	L. Putnam
Gideon		L. Putnam
Gilliflower		L. Putnam
Golden Russet	D. T. Trombly	L. Putnam
Green Sweet		L. Putnam
Hubbardston	C. S. James	R. H. Bristol
Jonathan	R. H. Bristol	
King	D. T. Trombly	R. H. Bristol
Mann	R. H. Bristol	D. T. Trombly
McIntosh	R. H. Bristol	W. C. Holcomb
McMahon		L. Putnam
Nero	Geo. H. Wright and Sons	L. Putnam
N. Spy	C. S. James	
N. W. Greening	L. Putnam	
Pewaukee	D. T. Trombly	L. Putnam
Pound Sweet	D. T. Trombly	L. Putnam
Red Canada	C. S. James	
R. I. Greening	Geo. H. Wright and Sons	C. S. James
Rome Beauty	L. H. Sheldon	

VARIETY.	FIRST PREMIUM.	SECOND PREMIUM.
Roseau		L. Putnam
Roxbury Russet	S. G. and H. S. Macomber	R. H. Bristol
Rubicon	D. T. Trombly	R. H. Bristol
Russian		L. Putnam
Scott Winter		L. Putnam
Spitzenburg	R. H. Bristol	W. C. Holcomb
Sutton	L. H. Sheldon	
Switzer		L. Putnam
Tinmouth	R. H. Bristol	
Tolman Sweet	W. C. Holcomb	D. T. Trombly
Washington Royal	W. C. Holcomb	
Wealthy	L. Putnam	W. C. Holcomb
Westfield	C. S. James	R. H. Bristol
Willow Twig	L. Putnam	
Wolf River	L. Putnam	W. C. Holcomb

PLATE COLLECTION OF APPLES.

R. H. Bristol	First premium
W. C. Holcomb	Second premium
L. Putnam	Third premium

PACKAGE EXHIBIT, '08 APPLES.

George H. Wright and Sons	First premium
W. C. Holcomb	Second premium
T. L. Kinney	Third premium

CLASS II. PLATE EXHIBITS OF PEARS.

	FIRST PREMIUM.	SECOND PREMIUM.
Anjou	Mrs. H. D. Allen	T. B. Landon
Winter Nelis	T. L. Kinney	Mrs. H. D. Allen

CLASS III. VEGETABLES.

Best collection of potatoes	L. Putnam	First premium
Best exhibit of beets	L. Putnam	First premium
Best exhibit of cabbages	L. Putnam	First premium

Best exhibit of carrots	L. Putnam	First premium
Best exhibit of mangel wurzel	L. Putnam	Second premium
Best exhibit of onions	D. T. Trombly	First premium
Best exhibit of parsnips	L. Putnam	First premium
Best exhibit of salsify	L. Putnam	Second premium

CLASS IV. PLANTS AND FLOWERS.

Best exhibit of potted plants	H. M. Totman	Second premium
Best exhibit of cut flowers	H. M. Totman	First premium

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